

About ESRI

On any given day, more than 1,000,000 people around the world use ESRI's geographic information system (GIS) technology to improve the way their organizations conduct business. Founded in 1969, ESRI's GIS solutions are emerging as an integral component in nearly every type of business and government service. Headquartered in Redlands, California, ESRI has offices throughout the United States; a business partner program with more than 1,200 developers, consultants, resellers, and data providers; and a network of more than 75 international distributors with users in more than 229 countries. Each year, ESRI invests nearly 20 percent of its revenues in research and development and continues to set industry standards by developing software solutions using the latest programming and Internet technologies.

What has made ESRI the leader of the GIS software industry for an unprecedented 32 years? It is a rare combination of vision, business management, and a focus on customers.

ESRI education solutions

ESRI knows that education and training are vital to every successful GIS implementation and understands the challenges of getting and keeping workforce skills and knowledge up to date. ESRI also knows that every organization has a unique group of individuals with a variety of learning styles and educational needs. As a result, ESRI offers educational products covering a variety of topics related to GIS technology, GIS applications, and geographic information science (GIScience). ESRI® education solutions are scalable and match instructor-led training and Web-based training to the appropriate learners in an organization.

Today, ESRI courses support hundreds of thousands of GIS students and professionals. ESRI instructor-led courses are offered at ESRI facilities and client sites across the United States. The ESRI Virtual Campus is a leader in GIS education on the Web, making GIS courses and a global GIS learning community accessible to anyone with an Internet connection.

GIS *education solutions*

c o n t e n t s

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ESRI instructor-led and Web-based courses are coordinated to create functional learning paths. This Learning Guide, organized by software and topic, reveals these paths. View the learning paths and descriptions in the Learning Guide to find potential courses, then turn to the full course descriptions that follow in this catalog to determine the applicability of those courses. You may also visit www.esri.com/training to view detailed course outlines or to request additional copies of the catalog online.

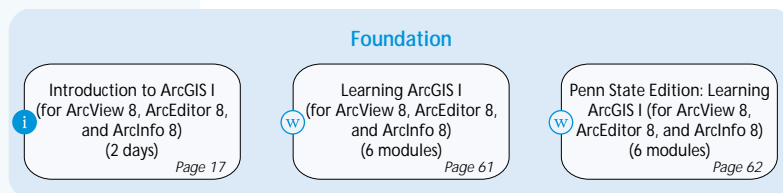
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ArcGIS Desktop

Courses for those using or planning to use ArcView®, ArcEditor™, or ArcInfo™.

Foundation

Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8), *Learning ArcGIS I* (for ArcView 8, ArcEditor 8, and ArcInfo 8), *Penn State Edition: Learning ArcGIS I* (for ArcView 8, ArcEditor 8, and ArcInfo 8)—Entry-level discussion of GIS concepts and the use of ArcGIS™ software for new users. Existing users should refer to the migration courses.



GIScience

See Page 12

GIScience

Courses that focus on the theory of GIS. See page 12.

Raster Proficiency

Working with Rasters in ArcGIS—For those who want to learn about raster concepts and cell-based display techniques.

Proficiency

Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8), *Learning ArcGIS II: Presenting Information* (for ArcView 8, ArcEditor 8, and ArcInfo 8)—More fundamental concepts for working with ArcGIS including editing, metadata, and analysis.

Customization/Programming

Introduction to Visual Basic for ESRI Software—Fundamentals of Microsoft® Visual Basic® (VB) in the context of a GIS solution. Strongly recommended for developers less experienced with VB.

Introduction to Programming ArcObjects with VBA—For students who will program applications with ArcGIS.

Advanced ArcObjects Component Development I—Designed for experienced ArcObjects™ and VB programmers who wish to learn how to extend the architecture of ArcGIS applications with the Component Object Model (COM). In addition to completing the prerequisite course *Introduction to Programming ArcObjects with VBA*, students should be comfortable traversing

continued on next page

Raster/Proficiency

Working with Rasters in ArcGIS (2 modules) Page 67

Extension

Learning ArcGIS 3D Analyst (6 modules) Page 68

Learning ArcGIS Spatial Analyst (6 modules) Page 69

Working with ArcGIS Spatial Analyst (for ArcView 8, ArcEditor 8, and ArcInfo 8) (3 days) Page 29

Introduction to Geostatistical Analysis (6 modules) Page 101

Proficiency

Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8) (3 days) Page 18

Learning ArcGIS II: Presenting Information (for ArcView 8, ArcEditor 8, and ArcInfo 8) (5 modules) Page 63

Focused Topics

See Page 13

Database Design/Development

See Page 6

Customization/Programming

Introduction to Visual Basic for ESRI Software (6 modules) Page 82

Introduction to Programming ArcObjects with VBA (5 days) Page 22

Advanced ArcObjects Component Development I (3 days) Page 24

Advanced ArcObjects Component Development II (C++) (2 days) Page 25

i Instructor-Led Course

w Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

ArcGIS Desktop (continued)

the Object Model Diagrams (OMDs) and have at least three months experience developing with ArcObjects before attending this course.

Advanced ArcObjects Component Development II (C++)—This advanced-level VC++ course is for experienced VC++ developers who have successfully completed the prerequisite courses *Introduction to Programming ArcObjects with VBA* and *Advanced ArcObjects Component Development I* and who are comfortable with ArcObjects and writing VC++/COM applications. This course builds on the topics discussed in *Advanced ArcObjects Component Development I* and covers more advanced customization and integration options for ArcGIS applications.

Extension

Learning ArcGIS 3D Analyst, *Learning ArcGIS Spatial Analyst*, *Working with ArcGIS Spatial Analyst (for ArcView 8, ArcEditor 8, and ArcInfo 8)*, *Introduction to Geostatistical Analysis*—How to use ArcGIS Desktop optional extensions.

Focused Topics

Short, focused technical sessions accompanied by an audio presentation. See page 13.

Database Design/Development

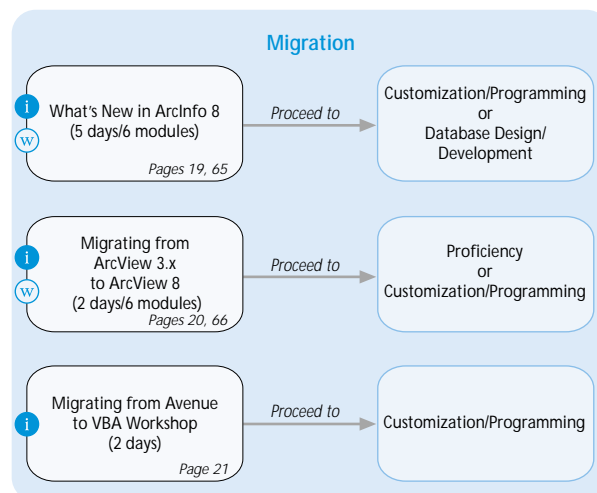
How to get the most out of geodatabases. See page 6.

Migration

What's New in ArcInfo 8—For experienced ARC/INFO® 7.x users and similar in scope to the foundation and proficiency courses, this course explores the new applications in ArcInfo 8.

Migrating from ArcView 3.x to ArcView 8—For experienced ArcView 3.x users and similar in scope to the foundation courses, this course explores the new applications in ArcView 8.

Migrating from Avenue to VBA Workshop—For experienced Avenue™ programmers, this workshop provides the skills and knowledge Avenue programmers need to customize ArcView 8. For those wanting a more comprehensive introduction to ArcObjects, see *Customization/Programming* on page 4.



Instructor-Led Course Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

ArcSDE

Courses for those using or planning to use ArcSDE™ software.

Recommended

Creating and Managing Geodatabases (for ArcEditor 8 and ArcInfo 8), Creating, Editing, and Managing Geodatabases—How to work with geodatabases. Recommended for those who will create and manage ArcSDE geodatabases.

Foundation

Introduction to ArcSDE using ArcInfo 8—Teaches the data format and architecture of ArcSDE and highlights the benefits of using ArcInfo with ArcSDE such as multiuser editing and versioning.

ArcSDE Administration

ArcSDE Administration for DB2, ArcSDE Administration for Oracle, ArcSDE Administration for SQL Server—How to administer an ArcSDE database. These courses do not require the completion of *Introduction to ArcSDE using ArcInfo 8* because they include those introductory concepts. The courses require familiarity with database administration for the database platform addressed by the course.

Focused Topics

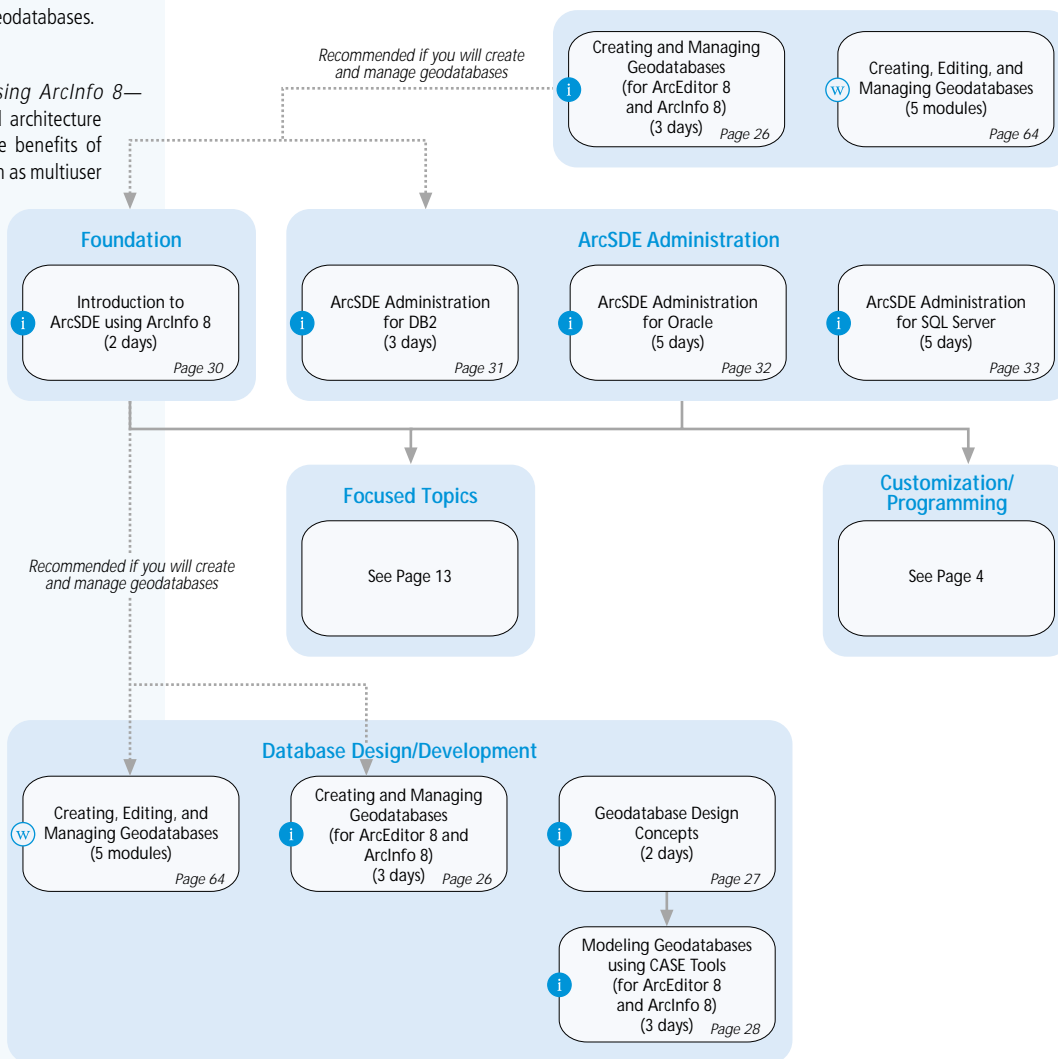
Short, focused technical sessions accompanied by an audio presentation. See page 13.

Customization/Programming

For programming ArcGIS applications, see page 4.

Database Design/Development

Creating, Editing, and Managing Geodatabases, Creating and Managing Geodatabases (for ArcEditor 8 and ArcInfo 8), Geodatabase Design Concepts, Modeling Geodatabases using CASE Tools (for ArcEditor 8 and ArcInfo 8)—How to get the most out of geodatabases.



i Instructor-Led Course

w Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

ArcIMS

These courses create a foundation for successful ArcIMS® software developers.

Recommended

Introduction to ArcSDE using ArcInfo 8—Recommended for those who use ArcSDE databases.

Foundation

Introduction to ArcIMS, Learning ArcIMS—Introduces ArcIMS concepts and applications.

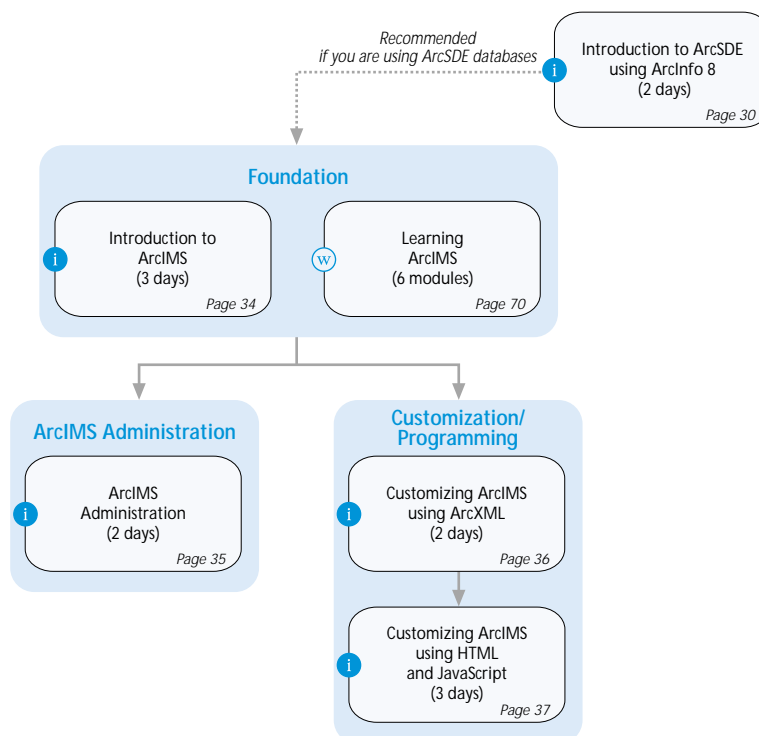
ArcIMS Administration

ArcIMS Administration—Teaches ArcIMS administrators how to maximize the performance, security, and reliability of their ArcIMS sites. Requires the completion of *Introduction to ArcIMS* or *Learning ArcIMS*.

Customization/Programming

Customizing ArcIMS using ArcXML—For Internet developers planning to customize ArcIMS using advanced ArcXML requests. Completion of *Introduction to ArcIMS* or equivalent experience is required.

Customizing ArcIMS using HTML and JavaScript—For advanced HTML and JavaScript™ developers. Completion of *Customizing ArcIMS using ArcXML* is a prerequisite. Experience in programming with HTML and JavaScript is mandatory.



i Instructor-Led Course **w** Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

ArcInfo Workstation

Courses for those interested in learning about ARC, ArcPlot™, ArcEdit™, and ArcGrid™ applications and the ARC Macro Language (AML™) programming environment.

Foundation

Introduction to ArcInfo using ArcTools—Entry-level discussion of GIS concepts and the use of ArcInfo Workstation software.

Proficiency

Advanced ArcInfo using ARC, ArcPlot, and ArcEdit—Includes topics on extended coverage data models, advanced cartography, using table relationships, and working with imagery. Students finishing the introduction course should spend at least four months working with the software before taking this course.

Extension

Working with ArcGrid—Focuses on the ArcInfo raster model: creation, display, and analysis. Students finishing the introduction course should spend at least four months working with the software before taking this course.

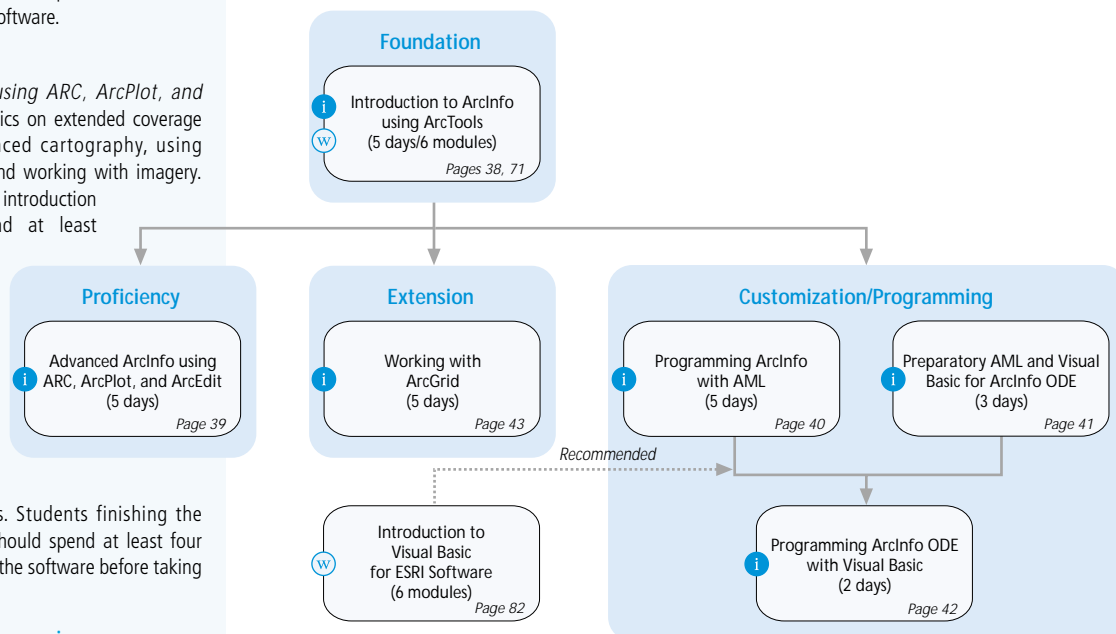
Customization/Programming

Programming ArcInfo with AML—How to create AML programs for automating ArcInfo tasks. Students finishing the introduction course should spend at least four months working with the software before taking this course.

Introduction to Visual Basic for ESRI Software—Fundamentals of VB in the context of a GIS solution. Recommended for students who have taken *Programming ArcInfo with AML* and want to develop VB applications using ArcInfo Open Development Environment (ODE).

Preparatory AML and Visual Basic for ArcInfo ODE—Primer for programming applications using ArcInfo ODE. For students who only want to learn the most important AML and VB concepts. Students finishing the introduction course should spend at least four months working with the software before taking this course.

Programming ArcInfo ODE with Visual Basic—How to develop interfaces to leverage ArcInfo functionality from third party software applications. Reserved for developers who are familiar with AML, VB, and ArcInfo.



ArcView 3.x

Courses for those using ArcView 3.x.

Foundation

Introduction to ArcView—Entry-level discussion of GIS concepts and the use of ArcView 3.x software.

Proficiency

Advanced ArcView—Includes topics on acquiring and managing data, advanced cartography, and spatial modeling. Novice students should spend at least four months applying what they have learned in *Introduction to ArcView* before enrolling in this course.

Customization/Programming

Introduction to Avenue—Basic-level training on the ArcView scripting language.

Programming with Avenue—More in-depth discussions, training, and examples of the scripting language.

GIS Applications

Courses that focus on applying GIS technology in various professional fields. See page 11.

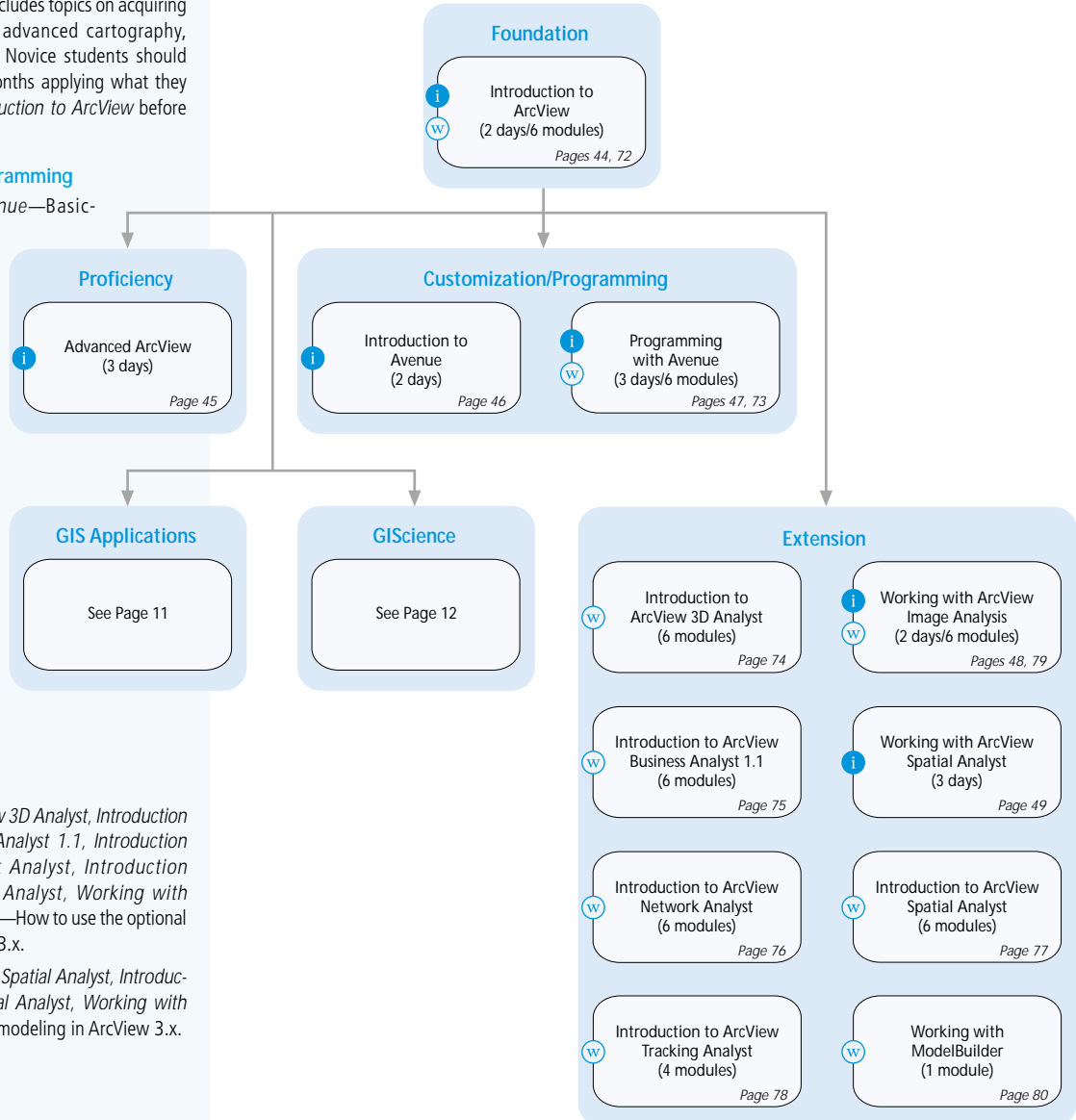
GIScience

Courses that focus on the theory of GIS. See page 12.

Extension

Introduction to ArcView 3D Analyst, *Introduction to ArcView Business Analyst 1.1*, *Introduction to ArcView Network Analyst*, *Introduction to ArcView Tracking Analyst*, *Working with ArcView Image Analysis*—How to use the optional extensions to ArcView 3.x.

Working with ArcView Spatial Analyst, *Introduction to ArcView Spatial Analyst*, *Working with ModelBuilder*—Raster modeling in ArcView 3.x.



i Instructor-Led Course **w** Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

MapObjects

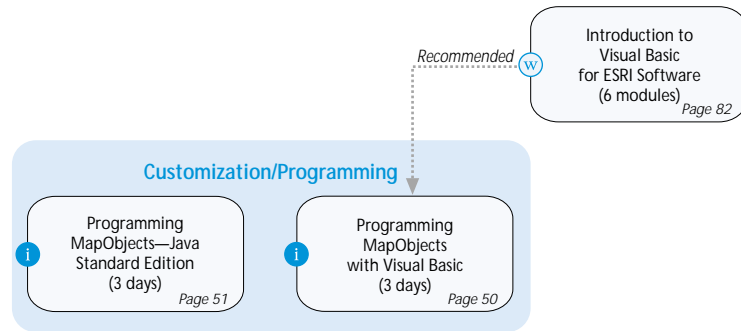
These courses create a foundation for successful MapObjects® software developers.

Customization/Programming

Introduction to Visual Basic for ESRI Software—Teaches fundamentals of VB. Strongly recommended for developers less experienced with VB.

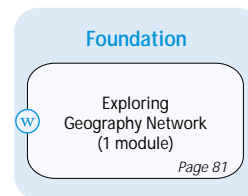
Programming MapObjects—Java Standard Edition—For advanced Java™ developers with limited or no MapObjects familiarity but who have significant experience writing Java code using the core Java application programming interface.

Programming MapObjects with Visual Basic—For developers with limited or no MapObjects programming experience but who have experience writing VB code using the methods and properties of Microsoft ActiveX® controls.



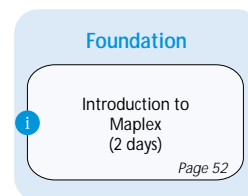
Geography Network

Exploring Geography Network—For those who want to learn about Geography Network™ and how to efficiently access its extensive resources. There are no prerequisites.



Maplex

Maplex is a stand-alone software program. There are no prerequisites for *Introduction to Maplex*.



i Instructor-Led Course **w** Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

GIS Applications

Courses that focus on applying GIS technology to various professional fields.

Foundation

Introduction to ArcView, Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8), Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8), Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)—Required or recommended for many GIS application courses.

Business

Introduction to Successful Marketing using ArcView 3.x—Shows how a GIS can facilitate daily marketing activities and decision making.

State and Local Government

Getting Started with Census Data (for ArcView 3.x)—Examines the United States Census 2000 and how to work with Census 2000 data.

GIS Applications for Tax Assessors (for ArcView 3.x)—Applies GIS technology in the local government tax assessment process.

Introduction to Urban and Regional Planning using ArcView 3.x—Covers basic planning concepts as well as how a GIS can be used to manage planning tasks.

Health

Mapping for Health Care Professionals using ArcView 3.x—Explores the distribution of disease, demographic characteristics, and health care facilities.

The Geography of Health Care Planning and Marketing (for ArcView Business Analyst 1.1a)—Uses GIS to analyze market areas and perform community health and site selection studies.

Natural Resources

Characterizing Forests using ArcView 3.x—Applies ArcView 3.x to the management of forest resources.

Conservation GIS using ArcView 3.x—Uses ArcView 3.x to analyze conservation data.

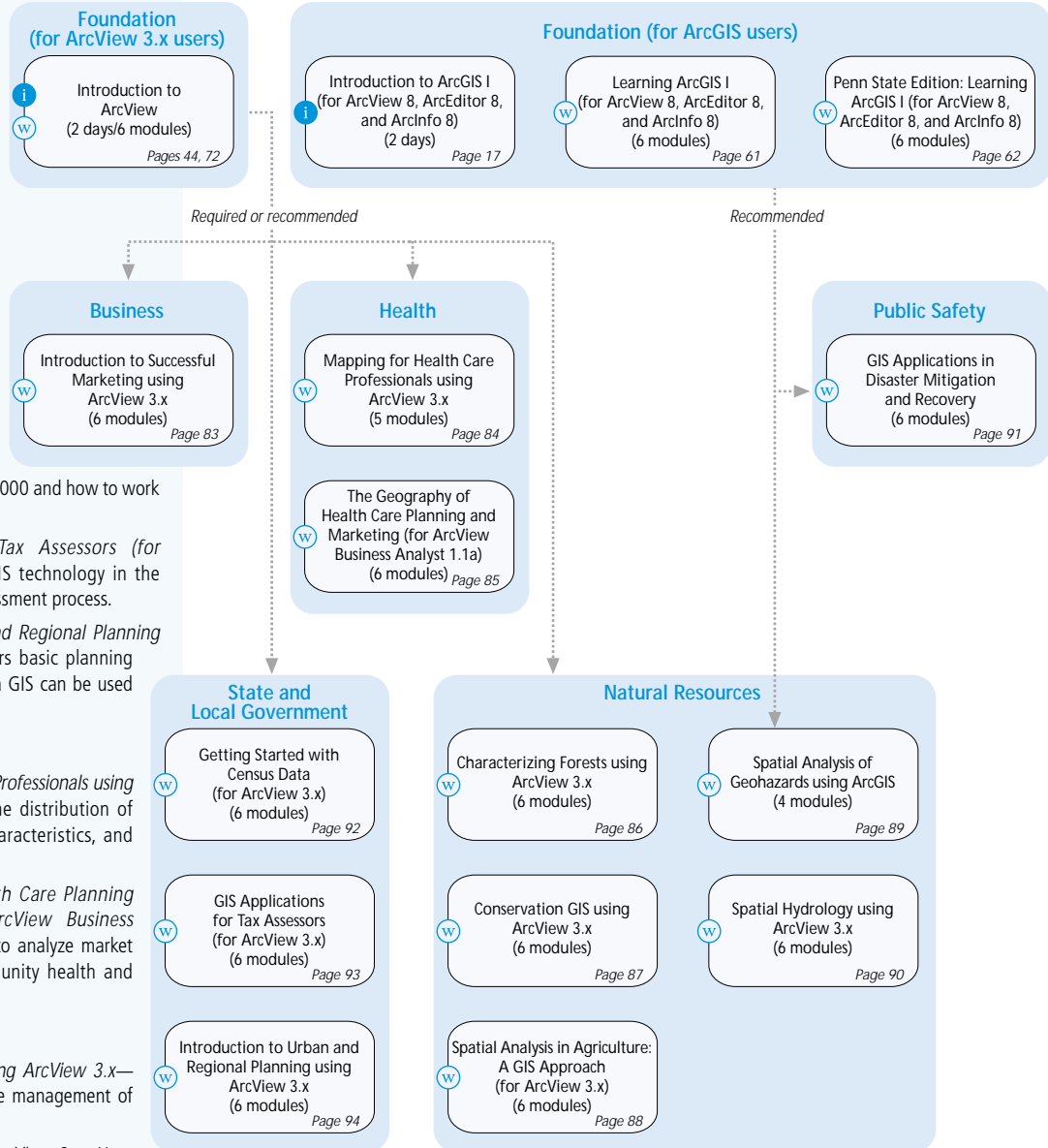
Spatial Analysis in Agriculture: A GIS Approach (for ArcView 3.x)—Applies spatial analysis to agriculture using ArcView Spatial Analyst.

Spatial Analysis of Geohazards using ArcGIS—Uses GIS to better understand geologic hazards.

Spatial Hydrology using ArcView 3.x—Solves hydrologic problems using ArcView Spatial Analyst.

Public Safety

GIS Applications in Disaster Mitigation and Recovery—Uses GIS in the disaster mitigation and recovery phases of emergency management.



i Instructor-Led Course **w** Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

Courses that focus on GIS theory and related topics. Many courses cover concepts that are not software specific but use software to illustrate them.

Foundation

Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8), *Learning ArcGIS I* (for ArcView 8, ArcEditor 8, and ArcInfo 8), *Penn State Edition: Learning ArcGIS I* (for ArcView 8, ArcEditor 8, and ArcInfo 8)—Entry-level discussion of GIS concepts and the use of ArcGIS software.

Fundamentals of GIS

Turning Data into Information—For intermediate GIS users. Examines the scientific methods used to derive useful information from spatial data. Companion to the book *Geographic Information Systems and Science* by Longley, Goodchild, Maguire, and Rhind (John Wiley & Sons, Ltd., and ESRI Press, 2001).

Understanding Geographic Data—For beginning GIS users and customers of GIS service providers. Provides a concise but comprehensive survey of the nature of geographic data and the technologies and professions involved in producing it.

Understanding Map Projections and Coordinate Systems—Explains how map projections and coordinate systems affect spatial data and analysis results. Concepts are illustrated with ArcGIS Desktop applications.

Penn State Edition: Cartographic Design—Teaches fundamental design principles for creating professional-quality maps.

Professional Practice

System Architecture Design for GIS—Introduces a proven system architecture design methodology for developing successful GIS design and implementation techniques.

Planning for a GIS—Presents a process for successfully planning and implementing a GIS, whether GIS projects are small, departmentwide, or enterprisewide. No software required.

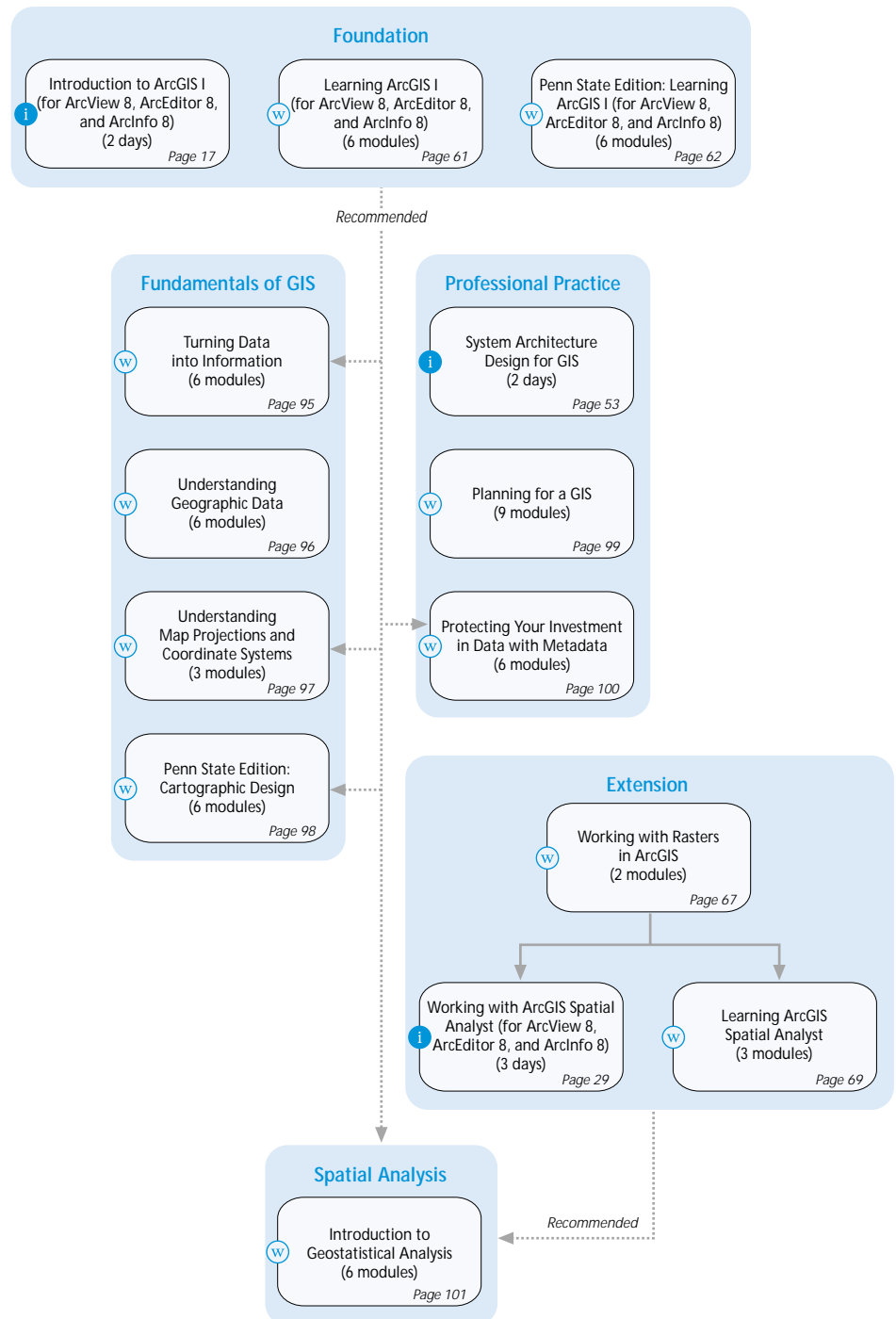
Protecting Your Investment in Data with Metadata—Shows how to take a critical look at data documentation needs and use ArcCatalog™ to document data.

Spatial Analysis

Introduction to Geostatistical Analysis—For those who want to learn the fundamentals of ArcGIS Geostatistical Analyst and the basics of spatial data exploration and surface creation. Familiarity with ArcGIS and introductory-level statistics is recommended.

Extension

Working with Rasters in ArcGIS, *Working with ArcGIS Spatial Analyst* (for ArcView 8, ArcEditor 8, and ArcInfo 8), *Learning ArcGIS Spatial Analyst*—How to work with raster data.



GIS Web Workshops

ESRI software users can now receive GIS training on focused topics. GIS Web Workshops consist of short, recorded technical presentations by subject matter experts plus transcribed excerpts. Some workshops also include a software exercise, animated exercise solution, exam, and certificate of completion. Visit campus.esri.com for information on available workshops.

Foundation

Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8), Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8), Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)—Recommended instructor-led and Web-based courses that provide prerequisite training on entry-level GIS concepts and ArcGIS software.

Focused Topics

Understanding GIS Queries—Explains how to solve many geographic problems by querying spatial features and their attributes using ArcGIS.

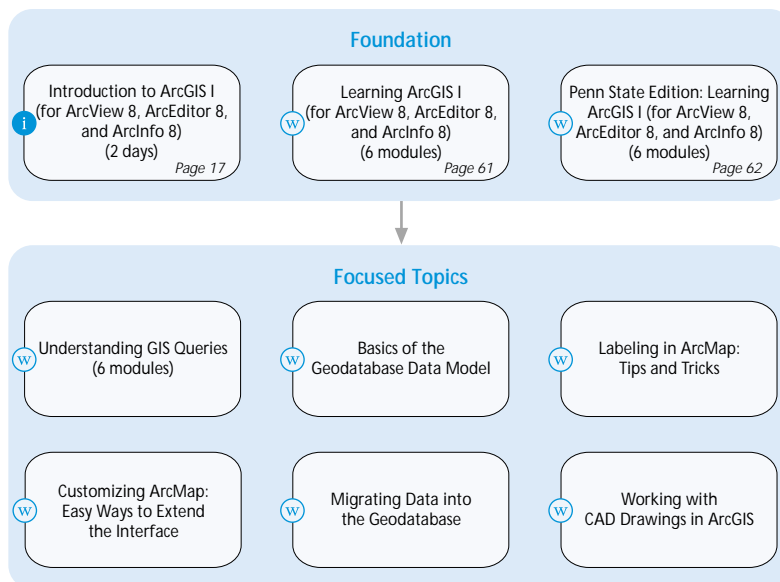
Basics of the Geodatabase Data Model—Introduces the basic elements of a geodatabase—tables, feature classes, feature datasets, and relationship classes.

Labeling in ArcMap: Tips and Tricks—Teaches how to use ArcMap™ advanced labeling tools to create effective labels and make maps more readable and understandable.

Customizing ArcMap: Easy Ways to Extend the Interface—Teaches easy ways to customize the ArcMap user interface and how to find and use sample code to extend ArcMap functionality.

Migrating Data into the Geodatabase—Illustrates proper techniques and methods for converting INFO™ files and coverages to geodatabase tables, feature classes, and feature datasets.

Working with CAD Drawings in ArcGIS—Teaches how to display CAD files in ArcGIS, convert them to geodatabase feature classes, and join tables of attributes to their associated feature classes.



i Instructor-Led Course **w** Web-Based Course

This Learning Guide is designed to support your training decisions and should be used along with the full course descriptions that follow in this catalog. Consult the full course descriptions for the applicability of specific courses, especially recommended courses.

Instructor-Led Courses

Instructor-led courses are the first choice of many learners. Free of their daily distractions, learners in classroom training focus completely on the task at hand. ESRI offers more than 35 instructor-led courses that explain GIS concepts, explore GIS applications, and teach people to use ESRI GIS software and related technologies. ESRI instructor-led training is ideal for those who need to learn the most in the shortest amount of time. It is especially recommended for application programmers and critical technical staff, for those who have specific technical or application questions, and for those who are new to GIS technology or who do not have the full support of skilled staff on the job.

Instructor-led courses combine personal delivery, hands-on experience, and class participation to create a rich learning environment. With class time divided about equally between lectures and exercises and ESRI's policy of one person per computer at ESRI training facilities, learners have ample time to practice their skills and apply what they learn. Individual attention, direct peer interaction, professional networking, and the ability to get answers to questions immediately are essential to the effectiveness of instructor-led training.

ESRI instructor-led training is offered at ESRI facilities and at client sites in the United States. ESRI teaches classes at nearly 30 training facilities in the United States including its corporate headquarters in Redlands, California, and 10 regional office locations.

The ESRI Learning Center in Redlands, California, processes all registrations for the ESRI instructor-led courses listed in this catalog. Registration information and a registration form are located on **page 55**. Visit www.esri.com/training for detailed instructor-led course outlines, up-to-date class schedules, registration information, pricing, to subscribe to our training newsletter, or to request additional printed catalogs. For seating availability or general information, call the ESRI Learning Center at 909-793-2853, extension 1-1585.

Instructor-led training is also available from ESRI training partners. ESRI authorizes instructors to teach several ESRI courses through the Authorized Training Program (ATP). Visit www.esri.com/atp for a listing of ATP authorized instructors near you.

ESRI Learning Center

Telephone: 909-793-2853, extension 1-1585

Fax: 909-335-8233

E-mail: learnGIS@esri.com




Web: www.esri.com/training

International Training

Outside the United States, contact your local ESRI distributor for course offerings and class schedules or visit www.esri.com/international to find the ESRI distributor nearest you.

Instructor-Led Courses

ArcGIS Desktop

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Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)

Two days

Overview

This two-day course introduces students to ArcGIS and provides the foundation for becoming a successful ArcView, ArcEditor, or ArcInfo user. Participants learn how to use ArcMap, ArcCatalog, and ArcToolbox™ and explore how these applications work together to provide a complete GIS software solution. The course covers fundamental GIS concepts as well as how to create, edit, and work with georeferenced spatial data. Attendees learn how to manipulate tabular data, query a GIS database, and present data clearly and efficiently using maps and charts.

Audience

This course is for those who are new to ArcGIS or to geographic information systems in general.

Goals

- Display feature and tabular data
- Work with georeferenced spatial data
- Query features using logical expressions
- Find features using spatial relationships
- Edit spatial and attribute data
- Associate tables with joins and relates
- Produce maps, reports, and graphs

Topics covered

ArcGIS overview: Capabilities and applications; Interacting with the interface; Basic display

Spatial data concepts: Representing spatial data and descriptive information

ArcGIS data model: Geodatabases; Shapefiles; Coverages; Feature types; Attributes

GIS software: Components; Functions; Applications

Spatial coordinate systems and map projections: Georeferencing data; What map projections are; How ArcMap works with map projections

Querying data: Selecting and identifying features; Creating reports and graphs

Map displays: Creating; Symbolizing; Scaling; Adding map elements

Prerequisites and recommendations

Registrants should know how to use windowing software.

This course provides the fundamental ArcGIS knowledge and experience needed to enroll in *Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8)* as well as several other ESRI courses. Many of the topics covered in this course are similar to those in *What's New in ArcInfo 8* and *Migrating from ArcView 3.x to ArcView 8*. Attendees who complete this course should not enroll in *What's New in ArcInfo 8* or *Migrating from ArcView 3.x to ArcView 8*.

Students who have worked with ArcInfo prior to version 8 and want to learn about the new ArcInfo applications should take *What's New in ArcInfo 8*. Students who have worked with prior versions of ArcView and want to learn about ArcView 8 applications should take *Migrating from ArcView 3.x to ArcView 8*.

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

*For onsite training of less than three days, add \$500 to the total charge.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alabama

Birmingham
Sep. 16–17

Alaska

Anchorage
Oct. 21–22
Juneau
Dec. 9–10

California

Hayward
Jul. 22–23
Redlands
Jul. 15–16
Aug. 12–13
Aug. 26–27
Sep. 16–17
Sep. 30–Oct. 1
Oct. 14–15
Nov. 4–5
Nov. 18–19
Dec. 9–10
Sacramento
Aug. 19–20

Colorado

Boulder
Jul. 15–16
Sep. 3–4
Oct. 7–8
Florida
Ft. Lauderdale
Jul. 15–16
Sep. 23–24
Tampa
Aug. 12–13
Georgia
Athens
Jul. 8–9
Atlanta
Aug. 5–6

Illinois

Chicago
Sep. 23–24
Dec. 2–3
Naperville
Jul. 22–23
Nov. 4–5
Kansas
Kansas City
Aug. 26–27
Maryland
Baltimore
Dec. 9–10
Massachusetts
Danvers
Jul. 15–16
Sep. 9–10
Oct. 21–22
Nov. 25–26
Dec. 16–17

Michigan

East Lansing
Aug. 5–6
Nov. 11–12
Minnesota
St. Paul
Aug. 19–20
Oct. 14–15
Dec. 16–17
Missouri
St. Charles
Jul. 8–9
Aug. 5–6
Sep. 9–10
Oct. 7–8
Nov. 4–5
Montana
Bozeman
Aug. 12–13
Nevada
Henderson
Sep. 9–10

New Mexico

Albuquerque
Jul. 22–23
Nov. 4–5
Nov. 18–19
New York
New York
Aug. 26–27
Nov. 18–19
Schenectady
Dec. 2–3
North Carolina
Charlotte
Jul. 8–9
Jul. 29–30
Sep. 9–10
Oct. 7–8
Nov. 18–19
Dec. 9–10

Ohio

Columbus
Jul. 22–23
Sep. 16–17
Nov. 11–12
Dec. 2–3
Oregon
Salem
Nov. 4–5
Pennsylvania
King of Prussia
Jul. 8–9
Sep. 9–10
Oct. 21–22
Nov. 11–12
Tennessee
Franklin
Jul. 29–30
Oct. 14–15

Texas

San Antonio
Jul. 15–16
Aug. 19–20
Sep. 9–10
Oct. 21–22
Nov. 11–12
Utah
Salt Lake City
Jul. 29–30
Oct. 21–22
Nov. 11–12

Virginia

Radford
Aug. 12–13
Nov. 7–8
Richmond
Aug. 12–13
Vienna
Jul. 8–9
Jul. 22–23
Aug. 5–6
Sep. 16–17
Oct. 7–8
Oct. 21–22
Nov. 4–5
Nov. 18–19
Dec. 2–3
Dec. 16–17
Washington
Olympia
Jul. 22–23
Aug. 26–27
Oct. 28–29
Dec. 9–10

See training center maps and addresses on pages 56 and 57.

Introduction to ArcGIS II *(for ArcView 8, ArcEditor 8, and ArcInfo 8)*

Three days

Overview

This three-day course follows *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* and continues to present important concepts and functionality for successfully working with ArcGIS. With further exploration of ArcMap, ArcCatalog, and ArcToolbox, students focus on spatial analysis, automation of spatial and attribute data, editing, and advanced options for cartographic display and reports. Hands-on exercises teach ArcGIS procedures in the context of solving real-world problems. Examples and exercises use data from a variety of application areas. A portion of the class is reserved for carrying out an analysis project and applying many of the new skills and techniques learned in this course. Students conduct queries, perform spatial analysis, and present their results in a hard-copy map and report.

Audience

This course is designed for those with fundamental knowledge of ArcGIS and geographic information systems in general.

Goals

- Perform spatial analysis
- Manage geographic data
- Perform geocoding
- Display points and lines from event tables
- Automate data through heads-up digitizing
- Convert data from other formats
- Edit spatial and attribute data
- Create and use metadata
- Produce high-quality maps and reports

Topics covered

Spatial analysis and data management: Buffers; Spatial overlays; Extracting features for analysis; Analytical methods and tools

Geocoding and display of dynamic segmentation: Address geocoding; Dynamic display of linear and point events; Data automation; Data sources; Georeferencing; Digitizing; Data conversion

Editing: Tools for creating and editing spatial data; Editing attribute data

Project management: Database organization; File and directory naming conventions; Creating and using metadata

Cartography: Advanced symbology and labeling

Prerequisites and recommendations

This course is for those who have completed *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Migrating from ArcView 3.x to ArcView 8* (instructor-led or Web-based course). If one of the prerequisite courses is not completed, a student should have comparable experience with ArcGIS before taking this course. The course also provides students with the fundamental ArcGIS knowledge and experience needed to enroll in *Creating and Managing Geodatabases (for ArcEditor 8 and ArcInfo 8)*.

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alabama

Birmingham
Sep. 18–20

Alaska

Anchorage
Aug. 7–9
Oct. 23–25
Juneau
Dec. 11–13

California

Hayward
Jul. 24–26
Redlands
Jul. 17–19
Aug. 14–16
Aug. 28–30
Sep. 18–20
Oct. 2–4
Oct. 16–18
Nov. 6–8
Nov. 20–22
Dec. 11–13
Sacramento
Aug. 21–23

Colorado

Boulder
Jul. 17–19
Oct. 9–11

Florida

Ft. Lauderdale
Jul. 17–19
Sep. 25–27
Tampa
Aug. 14–16

Georgia

Athens
Jul. 10–12
Aug. 7–9

Illinois

Chicago
Sep. 25–27
Dec. 4–6
Naperville
Jul. 24–26
Nov. 6–8

Kansas

Kansas City
Aug. 28–30

Maryland

Baltimore
Dec. 11–13

Massachusetts

Danvers
Jul. 17–19
Aug. 7–9

Michigan

East Lansing
Oct. 9–11
Nov. 13–15

Minnesota

St. Paul
Aug. 21–23
Sep. 11–13
Dec. 18–20

Missouri

St. Charles
Jul. 10–12
Aug. 7–9
Sep. 11–13
Oct. 9–11
Nov. 6–8

Montana

Bozeman
Aug. 14–16

North Carolina

Charlotte
Jul. 10–12
Sep. 11–13
Oct. 9–11
Nov. 20–22
Dec. 11–13

Nevada

Henderson
Sep. 11–13

New Mexico

Albuquerque
Jul. 24–26
Nov. 20–22

New York

New York
Aug. 28–30
Nov. 20–22
Schenectady
Jul. 17–19
Oct. 15–17
Dec. 4–6

Ohio

Columbus
Jul. 24–26
Sep. 18–20
Nov. 13–15
Dec. 4–6

Oregon

Salem
Nov. 6–8

Pennsylvania

King of Prussia
Jul. 10–12
Sep. 11–13
Oct. 23–25
Nov. 13–15

Tennessee

Franklin
Jul. 31–Aug. 2
Oct. 16–18

Texas

San Antonio
Jul. 17–19
Jul. 31–Aug. 2
Aug. 21–23
Sep. 11–13
Oct. 2–4
Oct. 23–25
Nov. 13–15
Dec. 4–6

Utah

Salt Lake City
Jul. 31–Aug. 2
Nov. 13–15

Virginia

Radford
Aug. 14–16
Richmond
Aug. 14–16
Vienna
Jul. 10–12
Jul. 24–26
Aug. 21–23
Sep. 18–20
Oct. 9–11
Oct. 23–25
Nov. 6–8
Nov. 20–22
Dec. 4–6
Dec. 18–20

Washington

Olympia
Jul. 24–26
Aug. 28–30
Oct. 2–4
Dec. 11–13
Seattle
Oct. 21–23

See training center maps and addresses on pages 56 and 57.

“The course was very good. It covered a lot of ground and provided a great base for furthering my work with this software.”

What's New in ArcInfo 8

Five days

Overview

This five-day course provides an introduction to the ArcInfo 8 applications, ArcMap, ArcCatalog, and ArcToolbox, for experienced users of other ESRI GIS software products. It provides an excellent foundation before moving on to more application-focused courses such as *Introduction to Programming ArcObjects with VBA*. Although the course covers similar topics as *Introduction to ArcGIS I and II (for ArcView 8, ArcEditor 8, and ArcInfo 8)*, the software is covered in more detail with less emphasis on basic GIS concepts. Students who want to learn how to use the new applications and basic GIS concepts should enroll in *Introduction to ArcGIS I and II (for ArcView 8, ArcEditor 8, and ArcInfo 8)*.

Audience

This course is for existing experienced ArcInfo Workstation or ArcView 3.x users who understand basic GIS concepts, such as projections, topology, and table relationships, but want to learn how to use ArcMap, ArcCatalog, and ArcToolbox.

Goals

- Create maps with and edit in ArcMap
- Explore data with ArcCatalog
- Use geoprocessing operations with ArcToolbox
- Work with geometric networks
- Use different types of customizations
- Work with metadata
- Set up a geoprocessing server
- Customize the ArcMap and ArcCatalog interface
- Create and use geodatabase attribute validation rules
- Create and use geodatabases
- Build graphs and reports
- Create labels and annotation
- Geocode locations

Topics covered

Software overview: Existing and new applications

Working with ArcMap: Overview of the interface; Maps and layers; Exploring data; Selecting features; Examining tables; Designing a map; Building map templates

Working with ArcCatalog: Introduction to the geodatabase; Overview of the interface; Viewing and managing data; Working with layers and documentation; Creating geodatabases

Working with ArcToolbox: Overview of the interface; Toolbox options; Working with tools and wizards; Data conversion tools; Adding custom tools; Using the geoprocessing server

The geodatabase: The new data model; Working with the geodatabase; Working with geodata objects; Using versions

Editing in ArcMap: Simple editing; Editing attributes; Creating a sketch; Snapping; Editing tasks; Creating features from other features; Properties; Complex feature construction

Geometric networks: Using utility networks; Solving network problems; Understanding network features; Setting directions, flags, barriers, and weights; Analyzing network problems; Creating networks

Customizing options: VBA scripts; Extending functionality; Creating a stand-alone application; Extending the data model

Prerequisites and recommendations

Participants must know how to complete basic GIS tasks with ARC/INFO 7.x or ArcView 3.x.

Registrants for this course should know the following:

- The coverage data model
- Topological overlay
- Basic ArcInfo skills (managing coverages, issuing geoprocessing commands, and running macros)
- Table relationships

Price: \$2,000 (Five days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$13,750. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Washington
Olympia
Aug. 5–9
Nov. 18–22

See training center maps and addresses on pages 56 and 57.

"This was a very detailed course, and I learned a lot of things with it that can enhance my job performance."

Migrating from ArcView 3.x to ArcView 8

Two days

Overview

This two-day course introduces ArcView 3.x users to the features and architecture of ArcView 8. Students learn how to use the new Windows-based applications—ArcMap, ArcCatalog, and ArcToolbox—and explore how these applications work together. Students gain a basic understanding of ArcView 8 and the experience they need to enroll in many other ESRI courses including *Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8)*. Participants learn how ArcView 3.x terminology and features relate to the new terminology and features of ArcView 8. They also learn how to create, edit, and georeference spatial data as well as manipulate tabular data, query a GIS database, perform spatial analysis, and present data clearly and efficiently using maps and graphs. Many of the topics covered in this course are similar to those in *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)*. Attendees who complete this course should not enroll in *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)*.

Audience

This course is for ArcView 3.x users who want to learn ArcView 8.

Goals

- Display feature and tabular data
- Georeference spatial data
- Query features using logical expressions
- Find features using spatial relationships
- Edit spatial and attribute data
- Import features into a geodatabase
- Produce maps, reports, and graphs

Topics covered

ArcView 3.x and ArcView 8 comparison: ArcView 8 terms and features

ArcView 8: Capabilities and applications; Interacting with the interface; Basic display; Importing ArcView 3.x projects and symbology into ArcView 8

New spatial data concepts: Representing spatial data; Representing descriptive information; Metadata

ArcGIS data model: Geodatabases; Shapefiles; Coverages; Feature types; Attributes

Editing: Editing spatial and attribute data

Attribute data: Field types; Table relationships; Associating tables; Creating reports and graphs

Utilizing spatial coordinate systems and map projections: Georeferencing data; How ArcMap works with map projections

Querying data: Selecting and identifying features

Creating maps: Creating; Symbolizing; Scaling; Adding map elements

Prerequisites and recommendations

Registrants should have taken *Introduction to ArcView* or have at least three to six months of recent experience using ArcView 3.x. Knowledge of ArcView 3.x terms and functionality is assumed.

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alaska
Anchorage
Aug. 5–6
California
Redlands
Jul. 2–3
Jul. 31–Aug. 1
Sep. 16–17
Oct. 14–15
Nov. 4–5

Colorado
Boulder
Jul. 1–2
Oct. 28–29
Idaho
Boise
Jul. 16–17

Illinois
Chicago
Aug. 26–27
Naperville
Dec. 9–10
Michigan
East Lansing
Oct. 7–8

Minnesota
St. Paul
Sep. 9–10
New Mexico
Albuquerque
Sep. 30–Oct. 1

North Carolina
Charlotte
Jul. 18–19
Sep. 23–24
Nov. 25–26
Texas
San Antonio
Jul. 29–30
Sep. 30–Oct. 1
Dec. 2–3

Utah
Salt Lake City
Sep. 9–10
Virginia
Radford
Sep. 30–Oct. 1
Vienna
Jul. 8–9
Aug. 19–20
Nov. 12–13

Washington
Olympia
Jul. 1–2
Sep. 30–Oct. 1

See training center maps and addresses on pages 56 and 57.

“This was a great class, and I feel that it gave me a good base to start working with the software.”

Migrating from Avenue to VBA Workshop

Two days

Overview

This two-day workshop provides the basic skills and knowledge Avenue programmers need to customize ArcView 8. Attendees build on their existing object-oriented programming (OOP) knowledge and extend that knowledge to programming with ArcObjects using Microsoft Visual Basic for Applications (VBA). To effectively use ArcObjects, participants learn about COM and how to read OMDs to program with interfaces and COM classes. The workshop's hands-on approach includes finding and using developer samples and writing code to perform common GIS tasks. ArcGIS Desktop software (ArcView 8, ArcEditor 8, and ArcInfo 8) share the same architecture, and the knowledge gained in this workshop applies to all three. Workshop time is mostly spent doing exercises. Lectures will be short and will include slides, graphics, and code samples. The workshop provides attendees with basic ArcObjects knowledge and experience. Those requiring a more comprehensive introduction should also enroll in *Introduction to Programming ArcObjects with VBA*.

Audience

This course is for experienced Avenue programmers who want to learn how to customize ArcView 8 using VBA and ArcObjects.

Goals

- Customize (change) the ArcMap graphical user interface (GUI)
- Create new COM classes
- Read and use OMDs to create basic programs
- Add spatial data layers to maps in ArcMap
- Symbolize layers in ArcMap using a renderer
- Create forms that collect user input
- Write programs that execute spatial and attribute queries
- Write a program that creates new spatial and attribute data by capturing user input

Topics covered

Avenue and VBA comparison: Comparing Avenue, ArcView 3.x, and ArcView 8 terms

Customizing the GUI: Adding buttons and tools; Storing customizations

Running existing programs: Using existing ArcView 8 functionality and developer samples

Programming with COM classes: Using COM to create classes

OMDs: Reading and using OMDs

Working with layers: Adding layers to maps; Symbolizing layers

Working with attribute tables: Accessing fields and values

Spatial and attribute selections: Querying data using geometry and attributes

Prerequisites and recommendations

Extensive Avenue programming experience and using the development environment to build custom ArcView applications are required. Attendees should be familiar with customizing the ArcView GUI, writing Avenue scripts, the ArcView class hierarchy, and document/control events. Participants should also understand VB fundamentals from *Introduction to Visual Basic for ESRI Software* (Web-based course), have finished a VB class or workbook, or have previous experience in VB. Attendees should be familiar with ArcMap and have completed any one of the courses below (or have equivalent knowledge).

What's New in ArcInfo 8

Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)

Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8)

Migrating from ArcView 3.x to ArcView 8

Price: \$600 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$4,124.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

*For onsite training of less than three days, add \$500 to the total charge.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Sep. 4–5
Nov. 25–26

Colorado
Boulder
Aug. 19–20
Nov. 25–26

Idaho
Boise
Jul. 18–19

Virginia
Vienna
Jul. 10–11

Washington
Olympia
Sep. 4–5
Seattle
Oct. 24–25

See training center maps and addresses on pages 56 and 57.

Introduction to Programming ArcObjects with VBA

Five days

Overview

In this five-day course students learn the fundamentals of VBA application development, OOP concepts, and the specifics of working with ArcObjects. Participants learn to use VBA development tools including VB editor, customize dialog box, and online help resources. They also learn the syntax for writing simple VB statements, how to write branching and looping structures, and how to design user forms. OOP concepts are described including the advantages of COM in which all ArcObjects classes are based. Interface programming, which may be new to seasoned programmers, is an important aspect of programming with the ArcObjects library and is covered in detail. ArcGIS Desktop software programs (ArcView 8, ArcEditor 8, and ArcInfo 8) share the same architecture, and the knowledge gained in this course applies to all three. Class time is mostly spent doing hands-on programming exercises, where students write code that exposes them to many typical GIS programming tasks as well as to the most commonly used ArcObjects classes. On the last afternoon of the course, participants will have time to work on more advanced programming exercises or to explore ArcObjects on their own. Upon finishing the course, students will have plenty of sample code from which they can build their own applications.

Audience

This course is for those who work with ArcMap and ArcCatalog on a technical level (analysts, programmers, and project managers) but may be new to programming with VBA. It is ideal for users who want to increase productivity by extending ArcGIS applications and for developers who want to create custom applications using VBA.

Goals

- Customize the GUI
- Learn VBA fundamentals
- Learn OOP concepts
- Get help for writing code
- Navigate the ArcObjects OMD
- Program with ArcMap objects
- Program with ArcCatalog objects
- Program with geodata, display, and geometry objects

Topics covered

VBA development environment: Customizing the user interface; Writing and debugging code

VB language fundamentals: VB syntax; Code storage; VB functions; Branching and looping; Creating user forms

OOP concepts: Objects and classes; Class libraries; Methods, properties, and events

COM: Advantages of COM; Defining a COM class; Interface programming

Reading OMDs: Class relationships; Class types; Using diagrams to write code

Maps and layers: Accessing maps and layers; Adding a layer to ArcMap; Classifying and symbolizing layers

Customizing ArcCatalog: Manipulating files in the catalog; Defining file types to be displayed

Working with data: Accessing data sets on disk; Creating new data; Editing data; Applying a domain to a geodatabase field

Geometry: Creating various types of geometry; Displaying geometry on the display; Storing geometry; Spatial operations

Spatial and attribute selections: Accessing a user selection; Defining an attribute or spatial query; Processing a subset of records

Layouts: Programmatically formatting a map layout; Adding elements; Defining symbols and colors for map elements; Accessing items from the ArcMap style gallery

Creating tools: Getting user input; Transforming mouse input to map unit; Working with the display

Programming ArcObjects events: Outbound vs. inbound interfaces; Finding events on OMDs; Accessing an object's outbound interface

Prerequisites and recommendations

Registrants should have taken *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *What's New in ArcInfo 8*, or have equivalent knowledge. The previously offered course, *Introduction to ArcInfo using ArcMap, ArcCatalog, and ArcToolbox*, is also an adequate prerequisite. Attendees should be familiar with ArcMap and ArcCatalog.

It is mandatory that registrants gain basic proficiency with VB/VBA before taking this course. Registrants for this course should already know how to

- Declare and use variables
- Write function and sub procedures
- Use conditional statements (If...Then...Else, Select Case)
- Work with loops (Do and While loops)
- Create forms, add controls, and write event procedures

Those without the requisite VB/VBA experience can gain proficiency before taking this course in one of the following ways:

- Read and complete the exercises in an introductory VB/VBA text
- Take *Introduction to Visual Basic for ESRI Software* (Web-based course)
- Take a third party introductory VB/VBA course

Note: This course was formerly titled *Programming ArcInfo with Visual Basic for Applications*. Students who have taken this class do not need to take this updated version.

Price: \$2,000 (Five days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$13,750. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

See training center maps and addresses on pages 56 and 57.

Alaska Anchorage Jul. 22–26	Colorado Boulder Sep. 16–20 Dec. 16–20	Illinois Chicago Nov. 18–22 Naperville Sep. 16–20	Michigan East Lansing Jul. 15–19 Oct. 28–Nov. 1	New Mexico Albuquerque Oct. 14–18	Oregon Portland Sep. 16–20	Virginia Radford Dec. 16–20	Washington Olympia Jul. 29–Aug. 2 Oct. 21–25
California Redlands Jul. 22–26 Aug. 19–23 Sep. 23–27 Oct. 21–25 Nov. 11–15 Dec. 16–20 Sacramento Sep. 23–27	Florida Ft. Lauderdale Dec. 2–6 Tampa Sep. 30–Oct. 4	Maryland Baltimore Sep. 16–20	Minnesota St. Paul Aug. 12–16 Dec. 9–13	New York New York Oct. 21–25 Schenectady Sep. 9–13	Pennsylvania King of Prussia Nov. 4–8	Vienna Jul. 15–19 Aug. 5–9 Aug. 19–23 Sep. 9–13 Sep. 30–Oct. 4 Oct. 21–25 Nov. 18–22 Dec. 9–13	
	Georgia Atlanta Dec. 9–13	Massachusetts Danvers Jul. 22–26 Sep. 30–Oct. 4	Missouri St. Charles Jul. 29–Aug. 2 Dec. 9–13	North Carolina Charlotte Aug. 12–16 Oct. 14–18	Texas San Antonio Jul. 8–12 Oct. 28–Nov. 1		
	Hawaii Kane'ohe Nov. 18–22		Nevada Henderson Oct. 7–11	Ohio Columbus Sep. 30–Oct. 4	Utah Salt Lake City Sep. 30–Oct. 4		

"The course was very informative. One of the most important concepts that this class helped me out with was reading OMDs and understanding how the different objects relate."

Advanced ArcObjects Component Development I

Three days

Overview

This three-day course teaches how to build custom components with ArcObjects to extend the functionality of ArcView 8.1, ArcEditor 8.1, and ArcInfo 8.1. The course begins with a review of COM technology and advanced VB–COM programming concepts then focuses on how to implement ArcObjects interfaces to solve real-world development tasks. Participants learn how to create VB ActiveX DLLs to support new custom commands, tools, menus, tab views, forms, and application and geodatabase extensions. The components created in class enhance the mapping, display, query, editing, and output characteristics of ArcMap and ArcCatalog. The creation of stand-alone ArcObjects applications is also covered. To successfully deploy components on client systems, the course covers ArcGIS licensing issues and shows how to package components so they can be successfully deployed on client systems. VB is the development language used for exercise solutions.

Audience

This course provides the essential background information and architectural concepts that all developers need to extend ArcGIS applications. The course is designed for proficient VB/VBA programmers who are familiar with COM, ArcGIS, and ArcGIS OMDs. All attendees must successfully complete *Introduction to Programming ArcObjects with VBA* or have equivalent ArcGIS programming experience (three months minimum is recommended) before attending. For VC++ developers, this course is also a mandatory prerequisite for *Advanced ArcObjects Component Development II (C++)*.

Goals

- Learn advanced VB and COM programming concepts and ArcObjects problem solving techniques
- Illustrate how to extend the architecture of ArcMap and ArcCatalog and program with the ArcObjects ESRI Map control
- Build ActiveX DLLs, OCXs, and custom mapping components
- Design custom COM commands, tools, menus, and forms
- Develop application and geodatabase extensions
- Lock application functionality, handle events, and hide code
- Debug and error handle components
- Learn the importance of component and category registration
- Implement component persistence
- Cover packaging and deployment

Topics covered

Fundamentals of COM and ArcObjects: COM components; Clients and servers; Classes; Interfaces; GUIDs; ArcObjects OMDs and Help system; Problem solving techniques

Implementing custom framework components: VB and COM; ActiveX components; VB ActiveX DLLs; Implementing interfaces; Developing custom commands and toolbars; Debugging; Error handling; Tips and tricks

Advanced custom component development: Extending Microsoft Windows®; Views; Property pages; Component categories

Application extensions: Building and delivering extensions; Persisting data; Customization filters

Extending the geodatabase: Editor extensions and events; Class extensions; Custom object inspectors

Stand-alone applications: VB EXE and ActiveX OCX development; ArcObjects map control; Creating a map; Active View; Data; Display; Output

Component registration and deployment: Regsvr32.exe; Registry files; OLEView.exe; Component category management; Versioning and compatibility; Package and deployment with the VB Setup wizard

Prerequisites and recommendations

It is mandatory that registrants complete *Introduction to Programming ArcObjects with VBA* before taking this course or have equivalent experience programming ArcObjects with VB or VBA. Familiarity with navigating the ArcObjects object model, interface programming, Unified Modeling Language (UML), COM technologies, ActiveX, OLE, and VC++ is also beneficial. This is not an introductory class.

Price: \$1,350 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$9,525. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 15–17
Aug. 7–9
Sep. 16–18
Oct. 7–9
Nov. 11–13
Dec. 11–13

Colorado
Boulder
Jul. 22–24

Massachusetts
Danvers
Sep. 4–6

Minnesota
St. Paul
Nov. 4–6

North Carolina
Charlotte
Jul. 15–17
Sep. 4–6

Nevada
Henderson
Dec. 9–11

Virginia
Vienna
Aug. 26–28
Sep. 23–25
Nov. 13–15

Washington
Olympia
Nov. 25–27

See training center maps and addresses on pages 56 and 57.

Advanced ArcObjects Component Development II (C++)

Two days

Overview

This two-day course is an extension of *Advanced ArcObjects Component Development I* and is designed specifically for VC++/COM developers. The course builds on the fundamentals learned in Part I and teaches developers how to design more advanced ArcObjects solutions using VC++. Developers learn how to write stand-alone and utility applications and then move on to write more advanced ArcObjects COM objects using Active Template Library (ATL). These include custom tools, extensions, property pages, renderers, and layers. Essential programming concepts, such as object lifetime management, persistence, and binary reuse, are also covered. The advanced capabilities of VC++ are used to customize areas of ArcGIS applications not covered in Part I such as the development of custom objects for the geodatabase. Stand-alone Windows application development using development platforms such as Microsoft Foundation Classes (MFC) is also covered. Other topics covered throughout the course include event handling, multicomponent design, and VB component integration. Microsoft Visual Studio® is the development environment used in this course.

Audience

This course is not designed for Visual Basic programmers or novice VC++ developers. It is for experienced VC++/COM developers who have successfully completed *Advanced ArcObjects Component Development I* and want to learn more about developing applications and extensions with ArcObjects. The course does not cover basic C++ and VC++ programming principles.

Goals

- Learn how to extend the architecture of ArcGIS applications with VC++
- Build real-world applications and integrated component solutions
- Build COM components with VC++ and ATL
- Design custom COM commands, tools, menus, forms, and windows
- Handle events in VC++
- Register components in component categories
- Write property pages and renderers
- Develop class extensions and custom objects for the geodatabase
- Implement component persistence

Topics covered

Advanced ArcObjects component development: ArcGIS products and licensing; Development directions, environments, and resources

Programming with ArcObjects and VC++: How VC++ facilitates COM development; Importing type libraries; Native smart types; Object life cycles; HRESULTs; Error handling; Strings and variants; Coding conventions; Console applications

ArcObjects–ATL applications: ATL classes and objects; ATL smart types and macros; Wizards; Writing ArcObjects ATL components; Category registration; IDL; Custom interfaces; Event sources and sinks; Multicomponent applications

Advanced ArcObjects–ATL applications: VC++ and VB GUI design and integration; Property pages; Persistence; Custom layers and renderers; Dockable windows

Advanced geodatabase customizations: Geodatabase structure; Accessing features; Class extensions; Simple and complex custom features; Binary reuse; Containment and aggregation; Custom objects

ArcObjects–MFC applications: Application design; MFC; MDI; SDI; Persistence

Prerequisites and recommendations

Registrants must complete *Advanced ArcObjects Component Development I* before taking this course. This prerequisite provides the essential background and fundamentals of how to extend the architecture of ArcGIS applications and will be beneficial to all developers, regardless of the development environment used. Students must also have experience writing VC++/COM objects with Visual Studio. It is also highly recommended that participants have experience using VC++ development APIs such as Windows32, MFC, and ATL.

Price: \$900 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$6,350.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

*For onsite training of less than three days, add \$500 to the total charge.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 18–19
Sep. 19–20
Oct. 10–11
Nov. 14–15

Colorado
Boulder
Jul. 25–26

Minnesota
St. Paul
Nov. 7–8

Nevada
Henderson
Dec. 12–13

Virginia
Vienna
Aug. 29–30

See training center maps and addresses on pages 56 and 57.

Creating and Managing Geodatabases *(for ArcEditor 8 and ArcInfo 8)*

Three days

Overview

This three-day course introduces the capabilities of the geodatabase. Attendees learn how to create, use, edit, and manage spatial and attribute data stored in the geodatabase. Discussion topics include loading data into the geodatabase; defining domains, subtypes, and relationship classes; and creating, editing, and performing analysis on geometric networks.

Audience

This course is for students who have a solid understanding of ArcGIS Desktop applications and are ready to take advantage of the geodatabase.

Goals

- Load data into the geodatabase
- Set spatial reference and spatial domain
- Create relationship classes
- Create and use rules for relationship classes and attribute data entry
- Manage topology in the geodatabase
- Build and perform analysis on geometric networks
- Set rules for editing and analysis on geometric networks
- Create and edit annotation

Topics covered

Introduction to the geodatabase: Data storage options; Geodatabase structures and permissions; Enterprise vs. personal geodatabase; Geodatabase tables in a database management system (DBMS)

Building a geodatabase: Designing the geodatabase; Defining its structure; Creating a new schema; Importing data; Loading data; Geometry types; Automation options

Understanding spatial domain: Precision vs. accuracy; Geodatabase coordinate storage; Calculating precision; How importing wizards work; Manually defining spatial domain

Relationship classes: Creating relationship classes; Setting relationship class properties; Using relationships in ArcMap; Relationship rules; Validation; Simple vs. composite relationships

Attribute validation rules: Subtypes and domains; Creating subtypes; Editing subtypes in ArcMap; Creating domains; Editing with domains in ArcMap; Coded value vs. range domains; Subtypes vs. lookup tables; Adding invalid data; Split and merge rules; Subtypes and relationship rules

Geodatabase topology: Topology management in the geodatabase; Feature datasets and topology; Creating and managing coincident geometry; Integrating vs. building a geometric network

Geometric networks: Storing a network; Simple vs. complex network features; Logical network; Flow on a geometric network; Performing network analysis; Network weights; Restricting the area of a trace; Complex edges; Building a geometric network; Setting network rules; Validating connectivity rules

Labels and annotation: Point and line label placement options; Label visibility; Labeling with an expression; Labeling groups of features differently; Reference scale; Creating annotation

Prerequisites and recommendations

Prior knowledge of the geodatabase is not required; however, registrants should complete *Introduction to ArcGIS I and II (for ArcView 8, ArcEditor 8, and ArcInfo 8)*, *What's New in ArcInfo 8* (instructor-led or Web-based course), or have equivalent knowledge. The previously offered course, *Introduction to ArcInfo using ArcMap, ArcCatalog, and ArcToolbox* is also an adequate prerequisite.

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

See training center maps and addresses on pages 56 and 57.

Alaska
Anchorage
Sep. 30–Oct. 2

California
Redlands
Jul. 1–3
Aug. 12–14
Sep. 9–11
Oct. 21–23

Colorado
Boulder
Sep. 9–11
Dec. 3–5

Florida
Ft. Lauderdale
Nov. 20–22
Tampa
Aug. 19–21
Georgia
Athens
Sep. 4–6

Idaho
Boise
Oct. 14–16
Illinois
Chicago
Jul. 15–17
Naperville
Oct. 2–4

Maryland
Baltimore
Nov. 13–15

Massachusetts
Danvers
Jul. 29–31
Dec. 4–6
Michigan
East Lansing
Sep. 11–13
Minnesota
St. Paul
Aug. 7–9

Missouri
St. Charles
Aug. 12–14
Oct. 14–16
Dec. 16–18
North Carolina
Charlotte
Sep. 16–18
Nov. 11–13
New Mexico
Albuquerque
Nov. 6–8

New York
New York
Oct. 2–4
Schenectady
Sep. 23–25
Ohio
Columbus
Sep. 4–6
Pennsylvania
King of Prussia
Aug. 19–21
Oct. 9–11

South Carolina
Columbia
Oct. 7–9
Texas
San Antonio
Aug. 26–28
Dec. 11–13
Utah
Salt Lake City
Oct. 23–25

Virginia
Vienna
Jul. 15–17
Aug. 12–14
Sep. 9–11
Oct. 7–9
Oct. 28–30
Dec. 9–11
Washington
Olympia
Sep. 9–11
Dec. 16–18

Geodatabase Design Concepts new

Two days

Overview

This new two-day course applies object-oriented analysis and design (OOAD) methodologies in modeling the geodatabase. It focuses on identifying the objects stored in the geodatabase and the relationships between them. Participants learn UML and use its notation and diagrams during the modeling process. A review of the geodatabase as well as a discussion of geographic data concepts (projections, coordinates, coding schemes, etc.) is included. This course does not address programming or database administration. Users interested in these topics may enroll in *Advanced ArcObjects Component Development I* and *Introduction to ArcSDE using ArcInfo 8*. This course is an excellent precursor to *Modeling Geodatabases using CASE Tools (for ArcEditor 8 and ArcInfo 8)*.

Audience

This course is for GIS data modelers, database designers, and analysts. Experience using ArcGIS is recommended.

Goals

- Write and analyze use cases
- Capture system architecture in a UML use case diagram
- Diagram a use case with a UML activity diagram
- Decompose use cases into concepts and associations
- Diagram the conceptual model using a UML class diagram
- Design classes, attributes, and relationships based on the conceptual model
- Diagram the design model using a UML class diagram
- Define an appropriate geodatabase structure for a model
- Build a geodatabase schema using ArcCatalog
- Load data into the geodatabase
- Define an appropriate spatial reference for feature classes and feature datasets

Topics covered

Overview of design: Overview of an OOAD process and GIS considerations

Introduction to object-oriented concepts, UML, and COM:

Background information on object-oriented concepts; Introduction to UML; Notes on COM; Reading ArcObjects OMDs

Developing use cases: Identifying system actors and use cases; Writing and formatting use cases; Levels of use cases; Use case scenarios; Developing use case and activity diagrams

Building the conceptual model: Decomposing concepts from use cases; Diagramming concepts using UML class diagram notation; Modeling concepts, concept attributes, and concept associations

Designing classes: Conceptual model to design model; Analyzing classes; Superclasses, subclasses, inheritance, and subtypes; Abstract, concrete, and leaf classes; Diagramming classes and subtypes; Documenting classes; Linking classes to ArcObjects

Designing attributes: Analyzing classes for attributes; Documenting and diagramming attributes; Attribute rules and normalization; ESRI data types and DBMS fields; Documenting and diagramming domains; Domains and subtypes

Designing relationships: Types of associations; Implementing associations; Relationship classes; Modeling relationships; Relationship keys; Degrees of relationships; Relationship properties and cardinality; Attributed relationships; Simple vs. composite relationships; Messaging and relationships; Relationships and subtypes; Modeling relationship rules; Modeling network connectivity rules with relationships; Diagramming relationships

Choosing a spatial abstraction: Projection design considerations; Scale and resolution design considerations; Types of topology; Vector and raster representations; Geodatabase vector geometry model; Network model, edges, and junctions; Annotation

Geodatabase considerations: Object classes, feature classes, and feature datasets; Supporting coincident features; Geodatabase coordinate storage; Computing coordinate precision and domains; ArcSDE vs. personal geodatabase; Managing security; Geodatabase clients

Automation plan and pilot project: Sources of data; Evaluating data sources; Loading coverages and shapefiles; Scanning; Digitizing; Automation management and staffing; Pilot project guidelines; Metadata

Prerequisites and recommendations

This is an intermediate course. Participants should be familiar with geodatabase concepts (feature classes, domains, etc.) and the software that interacts with the geodatabase (ArcMap, ArcCatalog, and ArcToolbox). Prerequisite skills may be obtained in *Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *What's New in ArcInfo 8*.

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500*. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 2–3
Jul. 22–23
Sep. 23–24
Oct. 28–29
Dec. 2–3
Sacramento
Sep. 9–10

Colorado
Boulder
Aug. 12–13
Nov. 4–5
Hawaii
Kane'ohe
Oct. 14–15

Massachusetts
Danvers
Aug. 26–27
Dec. 2–3
Missouri
St. Charles
Aug. 19–20

New Mexico
Albuquerque
Oct. 28–29
North Carolina
Charlotte
Aug. 19–20
Nov. 4–5

Ohio
Columbus
Dec. 9–10
Texas
San Antonio
Sep. 16–17

Utah
Salt Lake City
Nov. 18–19
Virginia
Vienna
Aug. 5–6
Sep. 30–Oct. 1

Washington
Olympia
Oct. 7–8

See training center maps and addresses on pages 56 and 57.

Modeling Geodatabases using CASE Tools (for ArcEditor 8 and ArcInfo 8)

Three days

Overview

This new three-day course teaches students how to use Microsoft Visio® and ArcGIS computer-aided software engineering (CASE) tools to design, diagram, and implement UML models of a geodatabase schema. A review of the geodatabase data format is included, along with instruction on how to migrate existing data sources, such as coverages and shapefiles, into a geodatabase. This course is an excellent follow-up to *Geodatabase Design Concepts*. This course does not address programming or database administration. Users interested in these topics may enroll in *Advanced ArcObjects Component Development I* and *Introduction to ArcSDE using ArcInfo 8*.

Audience

This course is for GIS data modelers, database designers, and analysts. Experience using ArcGIS is highly recommended.

Goals

- Become familiar with the Visio and ArcGIS CASE tool environment
- Capture a UML geodatabase design model using CASE tools
- Generate geodatabase schema using CASE tools
- Load data into a geodatabase schema
- Generate code for custom classes and class extensions using CASE tools

Topics covered

Geodatabase concepts: Overview of geodatabase data format; Comparison of personal and ArcSDE geodatabases; GIS design considerations

Introduction to CASE tools: Using CASE tools with the geodatabase; What CASE tools cannot do; Introduction to Visio; Stencils and shapes; Exporting a UML model to the repository; Installing the ArcCatalog CASE tool; Importing a UML model

Modeling object classes: Modeling classes in CASE tools; Organizing multiple models in Visio; Using the Visio UML navigator; Using multiple diagrams for a model; Modeling classes; Setting class properties, class tagged values, class attributes, and attribute tagged values

Modeling binary associations: Modeling binary associations in CASE tools; Setting relationship properties and relationship tagged values; Modeling attributed relationships

Modeling subtypes: Modeling subtypes as classes in CASE tools; Setting subtype defaults; UML stereotypes and relationship rules between subtypes; Generating geodatabase schema from the UML model

Modeling domains: Using template coded value and range domain classes in CASE tools; Setting domain properties; Creating a range domain; Creating a coded value domain; Organizing domains in the model

Modeling connectivity rules: Modeling connectivity rules in CASE tools; Deciding to use connectivity rules; Setting edge-to-edge connectivity rules with N-ary associations; Setting edge-to-junction connectivity rules with binary associations; Using generic junctions in the rules

Loading data into personal and ArcSDE geodatabases: Using the ArcCatalog simple data loader; Using the ArcMap object loader; Considerations for migrating existing data

Reapplying a model: Using CASE tools to reapply the UML model to a geodatabase; Effects on existing classes, subtypes, relationship classes, domains, and networks

Modeling behavior: Options for customizing applications and for extending the geodatabase data model; Using CASE tools to generate code; Building custom classes and custom class extensions

Prerequisites and recommendations

This is an intermediate course, best taken following *Geodatabase Design Concepts*. Participants must be familiar with geodatabase concepts (feature classes, domains, etc.) and the software that interacts with the geodatabase (ArcMap, ArcCatalog, and ArcToolbox). Prerequisite conceptual knowledge may be obtained in *Geodatabase Design Concepts*. Prerequisite software skills may be obtained in *Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *What's New in ArcInfo 8*.

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 24–26
Sep. 25–27
Oct. 30–Nov. 1
Dec. 4–6
Sacramento
Sep. 11–13

Colorado
Boulder
Aug. 14–16
Nov. 6–8
Hawaii
Kane'ohe
Oct. 16–18

Massachusetts
Danvers
Aug. 28–30
Missouri
St. Charles
Aug. 21–23

New Mexico
Albuquerque
Oct. 30–Nov. 1
North Carolina
Charlotte
Aug. 21–23
Nov. 6–8

Ohio
Columbus
Dec. 11–13
Texas
San Antonio
Sep. 18–20

Utah
Salt Lake City
Nov. 20–22
Virginia
Vienna
Aug. 7–9
Oct. 2–4

Washington
Olympia
Oct. 9–11

See training center maps and addresses on pages 56 and 57.

Working with ArcGIS Spatial Analyst *(for ArcView 8, ArcEditor 8, and ArcInfo 8)*

Three days

Overview

This new three-day course explores how the ArcGIS Spatial Analyst extension uses raster and vector data in an integrated environment. The course teaches basic raster concepts and shows how to use ArcGIS Spatial Analyst tools to create, run, and edit spatial models. It focuses on problems that are best solved in a raster environment such as surface analysis and distance measurement. Students are shown how to use the raster tools in ArcGIS Spatial Analyst and learn how to build grid-based datasets. The course emphasizes the use of powerful map algebra functions to solve common raster problems such as cost–distance analysis and hydrologic analysis.

Audience

This course is for those who need to learn how to use ArcGIS Desktop applications to conduct raster-based analysis, conversion, and editing.

Goals

- Understand the raster data models
- Learn the ArcGIS Spatial Analyst interface
- Convert data to raster format and build raster databases
- Learn many of the map algebra functions
- Use ArcGIS Spatial Analyst for distance modeling
- Interpolate surfaces from sample points
- Perform surface hydrology functions
- Apply basic modeling concepts
- Implement models

Topics covered

Basics of ArcGIS Spatial Analyst: Overview of the extension; Understanding raster concepts; ArcGIS Spatial Analyst interface; Comparing raster themes and feature themes; Querying raster themes

Structure of raster themes: How to create raster datasets; Raster storage and management

Aligning themes: Raster registration and georeferencing; How projection affects analysis; Importing and exporting raster datasets

Conducting surface analyses: Calculating density; Choosing an interpolation method; Interpolating a continuous raster from sample points; Contours and hillshading; Visibility analysis

Map algebra functions: Writing expressions; Expression syntax

Calculating distance measurements: Euclidean distance; Cost–distance; Finding the least-cost path

Surface hydrology: Identifying watershed basins; Determining surface runoff characteristics

Designing and implementing GIS models: Spatial modeling concepts and issues

Prerequisites and recommendations

Completion of *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or equivalent experience is required. Programming knowledge is not necessary.

Registrants for this course should know the following:

- Basic operating system skills (copying, deleting, and moving files and directories)
- Adding, renaming, and deleting themes
- Setting data frame properties (map and distance units, projection)
- Displaying layers in ArcMap
- Using ArcGIS menus, buttons, and tools
- Performing queries
- Selecting records in layers tables
- Using ArcGIS online help

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alabama

Birmingham
Nov. 13–15

California

Hayward
Aug. 6–8
Redlands
Jul. 22–24
Sep. 18–20
Oct. 16–18
Nov. 6–8

Colorado

Boulder
Aug. 21–23
Oct. 30–Nov. 1

Illinois

Chicago
Aug. 28–30
Naperville
Dec. 11–13

Massachusetts

Danvers
Oct. 23–25

Michigan

East Lansing
Aug. 7–9

Minnesota

St. Paul
Oct. 16–18

Missouri

St. Charles
Sep. 18–20
Oct. 23–25

New Mexico

Albuquerque
Oct. 2–4

North Carolina

Charlotte
Jul. 31–Aug. 2

Ohio

Columbus
Nov. 19–21

Texas

San Antonio
Sep. 25–27
Nov. 20–22

Utah

Salt Lake City
Sep. 11–13

Virginia

Vienna
Aug. 13–15
Sep. 17–19
Oct. 29–31
Dec. 3–5

See training center maps and addresses on pages 56 and 57.

Introduction to ArcSDE using ArcInfo 8

Two days

Overview

This two-day course details the architecture and fundamental concepts of ArcSDE software and storage structures. Through lectures and hands-on exercises, participants view and query layers in an ArcSDE database using ArcCatalog and ArcMap. They also create new ArcSDE layers by loading existing, file-based geographic data sources, such as shapefiles, coverages, and images, into an ArcSDE server. Exercises are supported with in-depth discussions and demonstrations of how ArcSDE clients, servers, and underlying DBMSs work. Topics from this course are included throughout the ArcSDE administration courses. Students taking any ArcSDE administration course do not need to attend this class.

Audience

This course is for GIS and DBMS users who need to become proficient end users of an ArcSDE geodatabase. GIS managers who oversee ArcSDE database implementation also benefit from this course by achieving an understanding of how a healthy system functions.

Goals

- Understand the geodatabase storage formats for each DBMS
- Learn the ArcSDE software architecture
- Load file-based vector and raster data into an ArcSDE geodatabase
- Create ArcSDE application server and direct connections to query the database
- Perform multiuser editing
- Work with multiple database versions

Topics covered

Geodatabase overview: History of file formats; Explanation of the geodatabase and ArcSDE; Geodatabase functionality; Geodatabase metadata tables; Valid entity types for feature classes

Software architecture: Client/Server model; Communication over the TCP/IP network; ArcSDE direct connections; Spatial queries; Retrieving data from the server; Administrator and user schema

Raster data: Storage options for raster data; How raster data is stored; Explanation of pyramids; Recording spatial reference; Storage parameters; Loading raster data using ArcCatalog

Vector data: Storage options; How vector data is stored in different databases and spatial storage options (e.g., ArcSDE binary, Oracle® Spatial, Informix®, and IBM® DB2® spatial types); Calculating offsets and scale; Using the DBTUNE table to control storage; Loading vector data using ArcCatalog; Modifying properties of a layer once loaded (permissions, grid size, initial extent envelope)

Multiuser editing: Explanation of multiuser editing; Advantages of multiuser editing; Understanding A and D tables; Refreshing from the database; Conflict resolution; Procedures for editing; Editing in ArcMap

Multiversioned ArcSDE database: Explanation of versions; Work flow diagrams; Procedures; Creating and managing versions; Permissions on versions; Merging versions; Conflict resolution; Managing the database

Prerequisites and recommendations

Registrants for this course should have a basic understanding of the following:

- Vector- and raster-based GIS concepts
- Projections and coordinate systems
- Fundamental relational database concepts
- Structured Query Language (SQL) queries
- Communication over a network

Price: \$900 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$6,350.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alaska
Anchorage
Oct. 3–4

California
Redlands
Jul. 25–26
Aug. 15–16
Sep. 12–13
Oct. 24–25

Colorado
Boulder
Sep. 12–13
Oct. 16–17

Florida
Tampa
Aug. 22–23

Idaho
Boise
Oct. 17–18

Illinois
Chicago
Dec. 12–13

Massachusetts
Danvers
Aug. 1–2
Oct. 17–18

Michigan
East Lansing
Sep. 23–24

Minnesota
St. Paul
Jul. 18–19

Missouri
St. Charles
Aug. 15–16
Oct. 17–18
Dec. 19–20

North Carolina
Charlotte
Sep. 19–20
Nov. 14–15

South Carolina
Columbia
Oct. 10–11

Texas
San Antonio
Jul. 2–3
Aug. 29–30
Sep. 23–24
Nov. 18–19

Virginia
Vienna
Jul. 18–19
Aug. 15–16
Sep. 12–13
Oct. 10–11
Oct. 31–Nov. 1
Dec. 12–13

Washington
Olympia
Sep. 12–13
Dec. 19–20

See training center maps and addresses on pages 56 and 57.

ArcSDE Administration for DB2

Three days

Overview

This new three-day course prepares DB2 database administrators for implementing ArcSDE by building their own, individual ArcSDE servers. Participants learn how to configure DB2 to support ArcSDE, install and configure ArcSDE, load vector and raster data, monitor and optimize queries, and manage a multiversioned geodatabase. Topics from *Introduction to ArcSDE using ArcInfo 8* are included throughout the course; students do not need to attend that class first. Throughout the class, effective methods for planning and managing storage, memory, and I/O are emphasized. Attendees learn to monitor access to their ArcSDE database by using ArcSDE and DBMS tools. Based on these results, a discussion follows on the guidelines to adjust resource allocation as database usage changes. Management of ArcSDE for access from ArcInfo clients, including multiversioned viewing and editing, is highlighted, while managing ArcInfo geodatabases on an ArcSDE system is covered in detail. The course focuses on understanding how ArcSDE software interacts with DB2 and proposes solid strategies for maintaining an enterprise GIS database.

Audience

This course is for experienced DB2 database administrators who need to manage ArcSDE databases and clients.

Goals

- Configure DB2 to support ArcSDE
- Install and configure ArcSDE
- Create vector feature classes and raster datasets
- Configure, create, and monitor connections
- Customize storage for ArcSDE vector and raster data
- Monitor and optimize query access
- Manage a multiversioned geodatabase

Topics covered

ArcSDE installation: Evaluating the DB2 server configuration; Preparing DB2 to use ArcSDE; Installing ArcSDE; Starting and stopping the ArcSDE server; Exploring ArcSDE system tables; Configuring ArcSDE and DB2 on separate hosts

Data loading: Creating storage space; Creating users and assigning privileges; Calculating a spatial domain; Creating vector feature classes from coverages and shapefiles; Creating raster datasets from image files; Building raster catalogs and mosaics; Estimating storage needs; Examining feature class components; Customizing storage with the DBTUNE table

Monitoring data access: Creating application server and OLE DB connections; Monitoring connections with ArcSDE and DB2 tools; Tracing client queries; Reporting system I/O

Optimizing data access: Analyzing spatial index performance; Creating a group layer; Creating a spatial view; Configuring the ArcSDE server processes; Working with overview and magnify windows, raster wire frames, scale-dependent layers, thumbnails, and spatial bookmarks

Managing a multiversioned geodatabase: Registering feature classes as versioned; Choosing version privileges; Reconciling and posting changes between versions; Compressing the state tree; Monitoring changes to the adds, deletes, and system tables; Viewing versioned tables from nonversioned clients

Prerequisites and recommendations

Registrants for this course should have experience with the following:

- DB2 database administration or application development
- Administering a Windows or UNIX® operating system
- Managing database storage
- Creating users and assigning their privileges
- Designing tables, indexes, constraints, and triggers
- Using spatial and tabular data from a GIS application
- SQL

Price: \$1,350 (Three days)

Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Sep. 4–6
Dec. 4–6

Colorado
Boulder
Aug. 6–8

Virginia
Vienna
Jul. 30–Aug. 1
Oct. 16–18

See training center maps and addresses on pages 56 and 57.

ArcSDE Administration for Oracle

Five days

Overview

This five-day course prepares Oracle database administrators for implementing ArcSDE by building their own individual ArcSDE servers. Participants learn how to configure Oracle to support ArcSDE, install and configure ArcSDE, load vector and raster data, monitor and optimize queries, and manage a multiversioned geodatabase. Topics from *Introduction to ArcSDE using ArcInfo 8* are included throughout the course; students do not need to attend that class first.

Throughout the class, effective methods for planning and managing storage, memory, and I/O are emphasized. Attendees learn to monitor access to their ArcSDE database by using ArcSDE and DBMS tools. Based on these results, a discussion follows on the guidelines to adjust resource allocation as database usage changes. Management of ArcSDE for access from ArcInfo clients, including multiversioned viewing and editing, is highlighted, while managing ArcInfo geodatabases on an ArcSDE system is covered in detail. The course focuses on understanding how ArcSDE software interacts with Oracle and proposes solid strategies for maintaining an enterprise GIS database.

Audience

This course is for experienced Oracle database administrators who need to manage ArcSDE databases and clients.

Goals

- Configure Oracle to support ArcSDE
- Install and configure ArcSDE
- Create vector feature classes and raster datasets
- Configure, create, and monitor application server, direct, and OLE DB connections
- Customize storage for ArcSDE vector, raster, and Oracle Spatial data
- Monitor and optimize query access
- Manage a multiversioned geodatabase

Topics covered

ArcSDE installation: Evaluating the Oracle server configuration; Preparing Oracle to use ArcSDE; Installing ArcSDE; Starting and stopping the ArcSDE server; Exploring ArcSDE system tables; Configuring ArcSDE and Oracle on separate hosts

Data loading: Creating storage space; Creating users and assigning privileges; Calculating a spatial domain; Creating vector feature classes from coverages and shapefiles; Creating raster datasets from image files; Building raster catalogs and mosaics; Estimating storage needs; Examining feature class components; Customizing storage with the DBTUNE table; Integrating ArcSDE with Oracle Spatial

Monitoring data access: Creating application server, direct, and OLE DB connections; Monitoring connections with ArcSDE and Oracle tools; Tracing client queries; Reporting system I/O

Optimizing data access: Analyzing spatial index performance; Creating a group layer; Creating a spatial view; Configuring the ArcSDE server processes; Working with overview and magnify windows, raster wire frames, scale-dependent layers, thumbnails, and spatial bookmarks

Managing a multiversioned geodatabase: Registering feature classes as versioned; Choosing version privileges; Reconciling and posting changes between versions; Compressing the state tree; Monitoring changes to the adds, deletes, and system tables

Prerequisites and recommendations

Registrants for this course should have experience with the following:

- Oracle database administration or application development
- Administering a Windows or UNIX operating system
- Managing database storage
- Creating Oracle users and assigning their privileges
- Designing tables, indexes, constraints, and triggers
- Using spatial and tabular data from a GIS application
- SQL

Price: \$2,250 (Five days)

Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 15–19
Aug. 26–30
Oct. 7–11
Dec. 9–13

Colorado
Boulder
Oct. 21–25

Massachusetts
Danvers
Aug. 12–16
Nov. 11–15

Minnesota
St. Paul
Nov. 18–22

North Carolina
Charlotte
Jul. 22–26
Oct. 28–Nov. 1

Texas
San Antonio
Aug. 12–16

Virginia
Vienna
Jul. 15–19
Aug. 19–23
Sep. 30–Oct. 4
Oct. 28–Nov. 1

Washington
Olympia
Jul. 15–19
Dec. 2–6

See training center maps and addresses on pages 56 and 57.

ArcSDE Administration for SQL Server

Five days

Overview

This five-day course prepares Microsoft SQL Server™ database administrators for implementing ArcSDE by building their own individual ArcSDE servers. Participants learn how to configure SQL Server to support ArcSDE, install and configure ArcSDE, load vector and raster data, monitor and optimize queries, and manage a multiversioned geodatabase. Topics from *Introduction to ArcSDE using ArcInfo 8* are included in this course; students do not need to attend that class first.

Throughout the class, effective methods for planning and managing storage, memory, and I/O are emphasized. Attendees learn to monitor access to their ArcSDE database by using ArcSDE and DBMS tools. Based on these results, a discussion follows on the guidelines to adjust resource allocation as database usage changes. Management of ArcSDE for access from ArcInfo clients, including multiversioned viewing and editing, is highlighted, while managing ArcInfo geodatabases on an ArcSDE system is covered in detail. The course focuses on understanding how ArcSDE software interacts with SQL Server and proposes solid strategies for maintaining an enterprise GIS database.

Audience

This course is for experienced SQL Server database administrators who need to manage ArcSDE databases and clients.

Goals

- Configure SQL Server to support ArcSDE
- Install and configure ArcSDE
- Create vector feature classes and raster datasets
- Configure, create, and monitor application server, direct, and OLE DB connections
- Customize storage for ArcSDE vector and raster data
- Monitor and optimize query access
- Manage a multiversioned geodatabase

Topics covered

ArcSDE installation: Evaluating the SQL Server configuration; Preparing SQL Server to use ArcSDE; Installing ArcSDE; Starting and stopping the ArcSDE server; Exploring ArcSDE system tables; Configuring ArcSDE and SQL Server on separate hosts

Data loading: Creating storage space; Creating users and assigning privileges; Calculating a spatial domain; Creating vector feature classes from coverages and shapefiles; Creating raster datasets from image files; Building raster catalogs and mosaics; Estimating storage needs; Examining feature class components; Customizing storage with the DBTUNE table

Monitoring data access: Creating application server, direct, and OLE DB connections; Monitoring connections with ArcSDE and SQL Server tools; Tracing client queries; Reporting system I/O

Optimizing data access: Analyzing spatial index performance; Creating a group layer; Creating a spatial view; Configuring the ArcSDE server processes; Working with overview and magnify windows, raster wire frames, scale-dependent layers, thumbnails, and spatial bookmarks

Managing a multiversioned geodatabase: Registering feature classes as versioned; Choosing version privileges; Reconciling and posting changes between versions; Compressing the state tree; Monitoring changes to the adds, deletes, and system tables; Viewing versioned tables from nonversioned clients

Prerequisites and recommendations

Registrants for this course should have experience with the following:

- SQL Server database administration or application development
- Administering a Windows operating system
- Managing database storage
- Creating SQL Server users and assigning their privileges
- Designing tables, indexes, constraints, and triggers
- Using spatial and tabular data from a GIS application
- SQL

Price: \$2,250 (Five days)

Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 29–Aug. 2
Sep. 30–Oct. 4
Nov. 18–22
Dec. 16–20

Colorado
Boulder
Sep. 23–27

Massachusetts
Danvers
Sep. 16–20
Dec. 9–13

Minnesota
St. Paul
Jul. 29–Aug. 2
Missouri
St. Charles
Oct. 28–Nov. 1

North Carolina
Charlotte
Aug. 5–9
South Carolina
Columbia
Sep. 9–13

Texas
San Antonio
Oct. 14–18

Virginia
Vienna
Sep. 16–20
Nov. 4–8
Dec. 2–6

Washington
Olympia
Nov. 11–15

See training center maps and addresses on pages 56 and 57.

Introduction to ArcIMS *Updated*

Three days

Overview

This updated three-day course introduces students to ArcIMS—an integrated approach for creating and maintaining geography-based Web sites. ArcIMS offers powerful capabilities in an easy-to-use framework, changing the way users can access and interact with Internet mapping and GIS data. Class participants gain hands-on experience using ArcIMS to build, utilize, and customize Internet mapping applications. This course also empowers attendees with a conceptual overview of how GIS mapping works on the Internet.

Audience

This course is for those who are new to ArcIMS and want to learn how to use ArcIMS to create and serve maps on the Internet.

Goals

- Author and design ArcIMS Viewers
- Utilize client functionality
- Introduce site administration
- Understand ArcXML structure
- Customize ArcIMS Viewers
- Install ArcIMS and explore its architecture

Topics covered

ArcIMS overview: What is ArcIMS?; Introducing multitier architecture; Creating an ArcIMS Viewer; Using ArcIMS Manager Applications

ArcIMS Author: Adding layers with Catalog; Supported data formats; Setting layer properties; Scale factors; Labeling; Rendering; Geocoding properties; Stored queries; Saving map configuration files

Designing ArcIMS Viewers: Creating ArcIMS Services; Using ArcIMS Designer; ArcIMS Viewer output

ArcIMS Viewers: HTML Viewer; Java Standard Viewer; Java Custom Viewer; ArcExplorer™—Java Edition; Client tools

ArcIMS Administrator: ArcIMS Spatial Servers; Virtual Servers; Instances; Refreshing ArcIMS Services; Site properties and configuration; Introducing ArcMap Server, Metadata Server, and Route Server

Collaborative tools: Adding layers; Changing layer properties; Viewer configuration files; MapNotes and EditNotes; Using Geography Network

Understanding ArcXML: What is XML?; HTML vs. XML; ArcXML syntax; Map configuration files; Requests and responses; *ArcXML Programmer's Reference Guide*; Customizing map display using ArcXML

ArcIMS Viewer customization: File structure; Frame layout; Customizing the interface (colors, titles, toolbars); Generic browser and user options; Editing ArcIMSParam.js; Using JavaScript with ArcIMS; Introducing the Java Viewer Object Model

ArcIMS architecture and installation: ArcIMS components; Web servers; Servlets; ArcIMS Application Server and connectors; Configuring ArcIMS; ArcIMS installation process

Prerequisites and recommendations

Although prior use of ArcGIS, ArcView, ArcInfo, or MapObjects is helpful in understanding GIS concepts, it is not a requirement. Similarly, those with an understanding of Internet programming and Web-based protocols have an advantage; however, experience with these is not required.

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California

Redlands
Jul. 1–3
Jul. 15–17
Aug. 5–7
Aug. 19–21
Sep. 23–25
Oct. 7–9
Oct. 21–23
Nov. 4–6
Nov. 18–20
Dec. 16–18

Colorado

Boulder
Aug. 27–29
Nov. 11–13

Florida

Tampa
Dec. 16–18

Georgia

Atlanta
Sep. 30–Oct. 2

Illinois

Chicago
Jul. 29–31
Oct. 7–9

Maryland

Baltimore
Oct. 16–18

Massachusetts

Danvers
Aug. 19–21
Nov. 18–20

Minnesota

St. Paul
Aug. 28–30
Oct. 23–25

Missouri

St. Charles
Jul. 22–24
Aug. 26–28
Sep. 23–25
Nov. 18–20

New York

New York
Jul. 29–31
Dec. 9–11
Schenectady
Aug. 12–14

North Carolina

Charlotte
Aug. 26–28
Dec. 2–4

Ohio

Columbus
Aug. 19–21
Oct. 21–23

Oregon

Portland
Oct. 30–Nov. 1

Pennsylvania

King of Prussia
Jul. 15–17
Sep. 23–25
Dec. 9–11

South Carolina

Columbia
Jul. 29–31

Texas

San Antonio
Aug. 7–9
Oct. 7–9
Nov. 25–27

Virginia

Richmond
Aug. 6–8
Vienna
Jul. 22–24
Aug. 13–15
Sep. 23–25
Nov. 4–6
Dec. 16–18

Washington

Olympia
Aug. 13–15
Oct. 15–17

See training center maps and addresses on pages 56 and 57.

"I will definitely use the skills learned from this class for my site's implementation of ArcIMS."

ArcIMS Administration new

Two days

Overview

This new two-day course teaches ArcIMS server administrators the things that make big differences in ArcGIS server performance, security, and reliability. Participants learn how to tune their ArcIMS Services, set up a secure server, apply hardware sizing considerations, perform distributed installations, and work with ArcSDE databases. Throughout the class, effective methods for planning and managing ArcIMS in an enterprise network environment are emphasized. Students learn how to deploy ArcIMS to make their site a success. Participants also learn important networking skills and the knowledge needed to operate and maintain an ArcIMS server. A review of security strategies is supported with in-depth discussions of ArcIMS interprocess communication necessary for firewall configuration. Hands-on exercises teach advanced installation and configuration techniques with distributed installations. Participants create, configure, and monitor connections to ArcSDE servers. The course describes how ArcIMS software interacts with ArcSDE and proposes solid strategies for improving performance.

Audience

This course is intended for ArcIMS server administrators who need more understanding of how ArcGIS server technology works behind the scenes to keep it running smoothly.

Goals

- Troubleshoot faulty ArcIMS Services
- Understand security issues
- Enable the Secure Sockets Layer (SSL) and HTTPS
- Authenticate ArcIMS Services
- Optimize map configuration files
- Perform a distributed installation
- Understand ArcSDE architecture and connections
- Work with vector and raster data in ArcSDE

Topics covered

Network communication: Describe the Internet protocols that will be the vocabulary for the remainder of the course; Examine each from the standpoint of ArcIMS; How they work; How they can go wrong; Typical problems

Security: Describe common security strategies using the inherent capabilities of the operating system; Discuss firewall technologies, packet filtering, proxy services, network address translation, and virtual private networks; Discuss firewall architecture best practices and implications to ArcIMS; SSL and HTTPS; ArcIMS Service authentication

Installation and configuration: Practical distributed configurations; Load balancing spatial servers; Using multiple Web servers; Creating server clusters

Service tuning: Response time; Scale-dependent rendering; Generalization; Image types; Map projections; Image directories; Spatial indexes

ArcIMS sizing: Hardware considerations; Network bandwidth guidelines; Application server queuing

ArcSDE architecture and connections: ArcSDE software architecture; Setting up an ArcSDE server using ArcIMS; Creating ArcSDE application server and direct connections; Serving a versioned geodatabase with ArcIMS

ArcSDE vector data: ArcSDE feature class storage architecture; Serverside data loading using ArcSDE command line utilities; Organizing and managing privileges; Managing spatial and attribute indexes for optimal display and query performance; Presenting data using spatial views; Generalizing data for small-scale display using sdegroup

ArcSDE raster data: ArcSDE raster data storage architecture; Loading images using ArcSDE command line utilities; Creating seamless mosaics; Creating multirow rasters

Prerequisites and recommendations

It is recommended that participants complete *Introduction to ArcIMS* or have equivalent experience with the terms and concepts used in ArcIMS. General knowledge of TCP/IP networking principles is assumed. No ArcSDE experience is required.

Registrants for this course should have experience with the following:

- Administering a Windows operating system
- Creating ArcIMS Services
- Authoring and designing ArcIMS Web sites
- Managing site administration
- Installing ArcIMS
- ArcIMS architecture

Price: \$900 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$6,350.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

*For onsite training of less than three days, add \$500 to the total charge.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Sep. 26–27
Oct. 24–25
Nov. 21–22
Dec. 19–20
Sacramento
Oct. 29–30

Massachusetts
Danvers
Sep. 23–24

Missouri
St. Charles
Sep. 26–27
Nov. 21–22

New York
New York
Dec. 12–13

Ohio
Columbus
Oct. 24–25

Pennsylvania
King of Prussia
Sep. 26–27
Dec. 12–13

Texas
San Antonio
Sep. 5–6
Dec. 9–10

Virginia
Vienna
Nov. 7–8
Dec. 19–20

See training center maps and addresses on pages 56 and 57.

Customizing ArcIMS using ArcXML

Two days

Overview

This two-day course teaches experienced Web developers how to use ArcXML to communicate with ArcIMS. The course begins with an introduction to the different methods of customization then focuses on developing advanced ArcIMS requests using ArcXML. Participants learn how to construct requests that enable them to create map and legend images, query geometry and attribute information, and geocode and download data. An emphasis will be placed on constructing requests that optimize performance.

Audience

This course is designed for experienced ArcIMS users who are interested in learning ArcXML syntax to construct advanced requests.

Goals

- Understand the relationship between configuration files, requests, and responses
- Override the default map display
- Extract data
- Geocode
- Query attribute and geometric information
- Add new layers to the ArcIMS map display
- Render map features
- Project data
- Authenticate ArcIMS Services
- Optimize ArcXML requests and responses

Topics covered

Overview: Types of customization; Definitions, terminology, and document structure; Relationship between configuration files, requests, and responses; Using the *ArcXML Programmer's Reference Guide*; Requesting catalog and map service information

Altering the default map display: Navigating; Rendering layers; Changing layer draw order; Manipulating layer visibility; Filtering data; Changing properties of the output image

Creating legend images: Creating a default legend; Limiting layers in a legend; Displaying dynamic layers in a legend; Formatting the legend

Adding dynamic layers to a map image: Displaying a selected subset of data; Adding a new data source not already in a map service; Querying and buffering

Retrieving map feature information: Retrieving attribute and geometric information; Controlling and formatting the content of the response; Controlling the number of features returned to the client; Querying with dates

Rendering map layers: Rendering map layers using simple, value map, and scale dependent renderers; Labeling map layers; Implementing group renderers

ArcXML extensions: Using ArcXML to geocode and extract data

Projecting map layers: Purpose; Choosing a projection; Required projection elements; Using projection elements in configuration files; Projecting on the fly

Implementation: How ArcXML is used within HTML and JavaScript; Exploring a sample that uses advanced requests developed in the course

Restricting ArcIMS Services: What is it; How it works; Access Control List elements and attributes; Steps to implement; Pitfalls

Prerequisites and recommendations

It is mandatory that registrants complete *Introduction to ArcIMS* before taking this course or have equivalent experience with the terms and theories used in ArcIMS. Familiarity with XML is also recommended. Programming experience with HTML and JavaScript is beneficial but not required. This is not an introductory class.

Price: \$900 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$6,350.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

*For onsite training of less than three days, add \$500 to the total charge.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California

Redlands
Jul. 22–23
Aug. 8–9
Sep. 9–10
Oct. 10–11
Nov. 7–8
Nov. 18–19
Dec. 16–17

Colorado

Boulder
Sep. 30–Oct. 1
Nov. 14–15
Dec. 9–10
Florida
Tampa
Dec. 19–20

Georgia

Atlanta
Oct. 3–4
Illinois
Chicago
Aug. 12–13
Massachusetts
Danvers
Oct. 7–8
Nov. 21–22

Minnesota

St. Paul
Sep. 23–24
Dec. 2–3
Missouri
St. Charles
Sep. 30–Oct. 1
Dec. 2–3

New York

New York
Sep. 9–10
North Carolina
Charlotte
Aug. 29–30
Oct. 21–22
Dec. 5–6

Ohio

Columbus
Sep. 9–10
Nov. 4–5
Oregon
Portland
Nov. 4–5
South Carolina
Columbia
Aug. 1–2

Texas

San Antonio
Dec. 18–19
Virginia
Vienna
Jul. 8–9
Sep. 26–27
Oct. 21–22
Dec. 9–10

Washington

Olympia
Aug. 19–20

See training center maps and addresses on pages 56 and 57.

Customizing ArcIMS using HTML and JavaScript

Three days

Overview

This three-day course teaches experienced Web developers how to build HTML clients and extend the functionality of the HTML Viewer. The course introduces the different methods of customization and focuses on how to customize the HTML Viewer and extend its functionality. Participants learn the request/response model of an HTML client by building an application that enables them to debug ArcXML requests. This allows attendees to create their own clients as well as customize and understand the flow of requests in the existing HTML Viewer.

Audience

This course is designed for experienced ArcIMS users and HTML/JavaScript Web developers who are familiar with JavaScript methods.

Goals

- Learn key HTML/JavaScript concepts
- Understand the request/response cycle
- Build a request/response application
- Learn how a custom HTML client communicates with the ArcIMS server
- Build a custom HTML client
- Add functionality to the custom HTML client
- Understand how Dynamic HTML is used in ArcIMS clients
- Learn which HTML Viewer files are created by ArcIMS Designer
- Understand the purpose of the files in the HTML Viewer
- Learn how the HTML Viewer communicates with ArcIMS
- Understand the flow of requests in the HTML Viewer when initializing the application and when using the tools
- Enable functionality already built into the HTML Viewer
- Add functionality to the HTML Viewer

Topics covered

Overview to programming ArcIMS: Types of customization; Common HTML and JavaScript programming techniques

The request/response cycle: Preparing the request; Posting the request; Receiving the response; Extracting the response; Developing a request/response application

Building a custom client: Coding the interface; Communication with ArcIMS; Initialization

Adding functionality to the custom client: Using Dynamic HTML to create a zoom box; Adding navigation functionality; Creating a layer list and legend; Implementing identify functionality

Examining the HTML Viewer: The role of ArcIMS Designer; Initialization and configuration; Understanding tools and buttons

Customizing and adding functionality to the HTML Viewer: Identifying all visible features in an ArcIMS Service; Hiding layers in the legend and layer list; Passing parameters to the viewer; Adding options; Putting the overview map in a separate frame; Adding new tools and buttons to the HTML Viewer; Creating HTML Viewer templates

Optimization: Optimization of the HTML Viewer; Alternative clients; General optimization techniques; How to choose a client

Prerequisites and recommendations

It is mandatory that registrants complete *Introduction to ArcIMS* or have equivalent experience with the terms and theories used in ArcIMS. Advanced ArcXML is not taught in this course but used heavily. It is expected that registrants have this knowledge; therefore, it is mandatory that they complete *Customizing ArcIMS using ArcXML*. This course is not for those who are new to HTML and JavaScript. Intermediate programming experience with HTML and JavaScript is required. It is essential that participants be familiar with the Document Object Model, creating HTML tables, string extraction methods, and capturing and handling events. This is not an introductory class.

Price: \$1,350 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$9,525. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 24–26
Aug. 14–16
Sep. 11–13
Oct. 16–18
Nov. 20–22
Dec. 4–6
Dec. 18–20

Colorado
Boulder
Oct. 2–4
Dec. 11–13
Illinois
Chicago
Aug. 14–16

Massachusetts
Danvers
Oct. 9–11
Minnesota
St. Paul
Sep. 25–27
Dec. 4–6

Missouri
St. Charles
Oct. 2–4
Dec. 4–6
New York
New York
Sep. 11–13

North Carolina
Charlotte
Oct. 23–25
Ohio
Columbus
Sep. 11–13
Nov. 6–8

Oregon
Portland
Nov. 6–8

Virginia
Vienna
Jul. 10–12
Sep. 4–6
Oct. 23–25
Dec. 11–13

Washington
Olympia
Aug. 21–23

See training center maps and addresses on pages 56 and 57.

Introduction to ArcInfo using ArcTools

Five days

Overview

This five-day course provides the conceptual overview and hands-on experience needed to understand GIS software and to perform GIS tasks using the workstation components of ArcInfo software. It teaches GIS concepts along with ArcInfo procedures for automating, displaying, manipulating, and analyzing data and creating maps. The course focuses on ARC, ArcPlot, and ArcEdit workstation applications using ArcTools™ software. It is for those using ArcInfo with Microsoft Windows NT® or UNIX operating systems. Participants build a spatial database, conduct queries, and create map displays using the ArcTools menu interface. They become familiar with the basic ArcTools tool sets—Map Tools, Edit Tools, and Command Tools. They also have the opportunity to experiment with ArcInfo commands and programs created with AML software. Hands-on exercises teach ArcInfo procedures in the context of solving real-world problems. In the process, participants learn to capture, store, and maintain geographic data in a geographic database. They conduct queries, create displays, analyze data, and present the results of their analysis as a hard-copy map.

Audience

This course is for those with little or no GIS experience who want to gain the necessary skills to become a successful ArcInfo Workstation user.

Goals

- Establish a spatial coordinate system
- Automate data through heads-up digitizing
- Convert digital data from other formats
- Create and maintain coverage topology
- Display and correct data errors
- Automate attribute data
- Associate attributes with spatial data
- Construct a continuous data layer
- Perform queries and spatial analysis
- Create map displays and products

Topics covered

Spatial data concepts: Representing spatial data and descriptive information; Spatial relationships

GIS software: Components; Functions; Applications

ArcInfo data model: Coverages; Feature types; Attribute tables

Topology: What it is; How to create and use it

Project management: Database organization; ArcInfo workspaces; Data dictionaries; File and directory naming conventions

Spatial coordinate systems and map projections: What they are; Choosing a map projection; Control points

Data automation: Data sources; Digitizing; Data conversion

Database construction: Edgematching; Merging coverages

Tabular database management: Linking attributes to features; Creating and manipulating tables

Database query and analysis: Statistics and frequency; Buffering; Topological overlay

Map displays and hard-copy maps: Creating; Symbolizing; Scaling

Prerequisites and recommendations

This course is for those with little or no GIS experience.

Price: \$2,000 (Five days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$13,750. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Aug. 5–9

See training center maps and addresses on pages 56 and 57.

Advanced ArcInfo using ARC, ArcPlot, and ArcEdit

Five days

Overview

This five-day course is an appropriate choice for those who want to broaden their range of abilities. The course offers hands-on experience and teaches the specific techniques needed to become a skilled ArcInfo user. It presents ArcInfo tools needed to solve complex real-world problems. The course focuses on ARC, ArcPlot, ArcEdit, and ArcTools applications. Participants learn techniques, ArcInfo commands, and ArcTools to manage and relate tabular data, model linear and complex area data, create map products, enhance editing sessions, use defined layers, and work with images.

Audience

This course is for experienced users of ArcInfo Workstation with Windows NT or UNIX operating systems.

Goals

- Manage and normalize tabular data
- Apply ARC relates and cursors
- Create high-quality maps and plots
- Improve editing sessions
- Edit multiple features simultaneously
- Use the regions (area) data model
- Use the dynamic segmentation (linear) data model
- Design, build, display, and maintain regions and route systems
- Create and query defined layers for ESRI standard data types
- Display and georeference images

Topics covered

Managing and processing tabular data: Databases; Keys; Normalization of tables

Using related files: ARC relates; One-to-many relates; Many-to-one relates; Stacked relates; Next processing

Cursors: Using cursors in ARC, ArcPlot, and ArcEdit; Using cursors with AML

Cartographic production: ArcPlot map-to-page transformation; Text placement and annotation; Symbolology; Qualitative and quantitative thematic mapping

Editing spatial data: Temporary files used in ArcEdit; Using tolerances; ARC and general snapping environments; Using ArcPlot commands in an edit session; Simultaneous editing of multiple features

Modeling complex areas using regions: Overlapping, nested, and discontinuous polygon features; Working with regions; Modeling; Analysis

Modeling arcs using dynamic segmentation: Working with route systems; Event databases; Cartographic uses of routes; Modeling; Analysis

Defining layers for ESRI data types: Defining layers for ArcSDE layers, ArcView shapefiles, ArcInfo coverages, ArcStorm™ map library layers, and ArcInfo Librarian™ map library layers; Applying spatial and attribute constraints; Exporting data from defined layers

Working with images: Types of images; Displaying images; Creating and using image catalogs; Converting images; Georeferencing images

Prerequisites and recommendations

This course is not for beginners. Registrants should complete *Introduction to ArcInfo using ArcTools* and accumulate an additional six months of experience using ArcInfo software before taking this course.

Registrants for this course should know the following:

- The coverage data model
- Creating INFO tables
- Basic ArcInfo skills (managing coverages, issuing commands or ArcTools operations, and running AML macros)
- Creating a simple display in ArcPlot
- Starting an edit session in ArcEdit

Price: \$2,000 (Five days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$13,750. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Oct. 28–Nov. 1

See training center maps and addresses on pages 56 and 57.

Programming ArcInfo with AML

Five days

Overview

This five-day course introduces the functionality of AML software and its associated menu interfaces. Participants begin the course writing simple AML programs and progress to creating larger utilities of moderate complexity. The course also teaches basic programming concepts and techniques.

Audience

This course will interest those who work with ArcInfo software on a technical level (analysts, programmers, and project managers). It is designed for experienced ArcInfo users who want to increase productivity and for programmers who want to create large applications using AML software.

Goals

- Design and write programs in AML
- Apply fundamental programming concepts
- Accommodate user input
- Automate repetitive tasks
- Anticipate and handle errors
- Create menu interfaces
- Run AML programs from a menu interface
- Manipulate character strings and coordinate data
- Read and write text files
- Use cursors to access data in INFO tables
- Use ArcTools to create applications

Topics covered

AML syntax: Directives, functions, and variables; Special characters

AML functionality: Looping and branching; Communicating with users and other programs; Automating commands; Error handling

AML programming techniques: Documentation techniques; Indentation styles; Managing variables; Looping efficiency; Modularity; Passing data; Accessing programs; Protecting source code; Organizing directories; ArcTools

Using and writing menus: Menus (tablet, digitizer, form, and enhanced pulldown); Controls (input fields, scrolling lists, choice fields, sliders, check boxes, buttons, and icons); Running menus; Building intelligence into menus; Multiple menus and screen layout; FormEdit™ and MenuEdit menu editors

Coordinate manipulation: AML coordinate variables; Using coordinate data; Point input buffer

Character string manipulation: Basic string handling; Delimited lists; Simulating arrays

File input/output: Managing, reading, and writing files; Accessing related tables using cursors

ArcTools: Using existing tools to enhance an application; Building new tools

Prerequisites and recommendations

Registrants should complete *Introduction to ArcInfo using ArcTools* and accumulate an additional six months of experience using command-level ArcInfo software before taking this course.

Registrants for this course should know the following:

- The coverage data model
- Basic operating system skills (copying, deleting, and moving files and directories)
- Basic ArcInfo skills (managing coverages, issuing commands, and running macros)
- Creating a simple display in ArcPlot

Price: \$2,000 (Five days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$13,750. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Nov. 11–15

See training center maps and addresses on pages 56 and 57.

Preparatory AML and Visual Basic for ArcInfo ODE

Three days

Overview

This three-day (Monday–Wednesday) course prepares class participants for the two-day (Thursday–Friday) course, *Programming ArcInfo ODE with Visual Basic*. The course teaches fundamental AML and VB programming skills. The first day focuses on AML elements that are especially useful when creating applications within ArcInfo ODE. The remaining two days cover VB concepts and techniques.

Audience

This course is for those who are unfamiliar with programming ArcInfo Workstation using AML or have little VB programming experience.

Goals

- Use fundamental AML programming concepts
- Get information about coverages in AML
- Manipulate strings in AML
- Create modular AML programs
- Decide when to use AML and when to use VB
- Use the VB interface and its components
- Associate code with objects and events
- Branch and repeat actions in VB
- Declare VB variables and manage scope
- Create subprocedures and functions in VB
- Write modular code in VB
- Use arrays and collections in VB
- Manage multiple forms in VB
- Debug in VB

Topics covered

Introduction to customizing ArcInfo: Programming fundamentals; Customization options in ArcInfo, ODE, AML, and VB

Introduction to AML: AML language components (directives, variables, and functions); Nesting functions; String manipulation; Watch files; Special characters

AML functions: Character string manipulation; Show; File input and output

Getting information and branching in AML: &Describe, &If...&Then, and &Select

Modularity: Using global variables and arguments

VB concepts: Understanding event-driven programming; Objects, methods, properties, events, and forms; VB interface; Working with simple controls; VB syntax; VB features

Branching in VB: If...Then, ElseIf, and Select Case statements

VB variables: Declaring; Using; Levels of scope; Static variables; Constants; Enforcing variable declaration

VB procedures: Subroutines; Functions; Event procedures; Standard modules; Scope; Calling procedures

Form management and standard modules: Loading and showing forms; Modal and modeless forms; Unloading forms vs. hiding forms; Unloading events; Ending an application; Writing modular code

Collections and arrays: Multidimensional arrays; Dynamic arrays; Redim statement; Object instantiation

Looping: For loops; Nesting; Looping through collections; Looping based on a condition; Looping efficiency

Debugging: Establishing breakpoints; Stepping through code; Using the Immediate window; Adding watches; Using call stacks; Handling run-time errors

Prerequisites and recommendations

This course is for those who are new to programming with AML and VB software. Participants should be familiar with command-level ArcInfo software. The course is designed for those who need to develop the necessary skills to meet the prerequisites of *Programming ArcInfo ODE with Visual Basic*.

Registrants for this course should know the following:

- The coverage data model
- Basic operating system skills (copying, deleting, and moving files and directories)
- Basic ArcInfo skills (managing coverages and issuing commands)
- Creating a simple display in ArcPlot
- Starting an edit session in ArcEdit

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Sep. 30–Oct. 2

See training center maps and addresses on pages 56 and 57.

Programming ArcInfo ODE with Visual Basic

Two days

Overview

This two-day course provides a conceptual overview and the hands-on experience needed to create applications with VB using ArcInfo ODE. It incorporates objects and methods available with ODE and standard Windows components to create a seamless end user interface. The course teaches the skills needed to work directly with ActiveX controls and the automation servers provided with ODE. ArcInfo ODE helps participants develop efficient, modern interfaces that include the powerful GIS functionality of ArcInfo.

Audience

This course is for students who have experience programming applications using VB.

Goals

- Create a VB application that uses ArcInfo functionality
- Use specific objects, methods, and properties provided with ODE
- Create a form for browsing coverage datasets
- Display a coverage on an ArcEdit canvas
- Specify and change the editing and drawing environment
- Communicate with ArcInfo software
- Avoid errors caused by sending ArcInfo multiple commands
- Display lists of symbols and colors
- Chart INFO tables with MSChart Control
- Drag and drop coverages onto an ArcPlot canvas

Topics covered

Overview of ArcInfo ODE: What ODE is and how it accesses ArcInfo functionality; ESRI controls; ESRI automation servers; Methods; Advantages of using ODE; Limitations of ODE

ESRI ArcEdit control: Adding an ArcEdit canvas to an application; Properties and methods of ArcEdit control; Using ODE to execute ArcInfo commands

Getting information from ArcInfo: Adding the ESRIutil automation server to an application; Accessing messages from ArcInfo software; Getting lists of coverages, features, items, item values, and properties and using these to provide choices for the end user

Manipulating the editing and drawing environment: Displaying coordinates in an application; Giving the end user a set of symbols and colors to choose from; Giving the end user a list of features to choose from for editing

Interacting with ESRI controls: Disabling nonactive controls while the user interacts with the ArcEdit canvas

Working with ArcInfo subdialogs in ODE: What ArcInfo subdialogs are; Sending responses to subdialogs from ODE

String manipulation in ODE: Using an ESRI-provided module to perform string manipulation functions that mimic AML string manipulation functions

Using Microsoft common controls and dialogs: Using the Color Common Dialog to specify ArcInfo colors; Converting VB color values to ArcInfo color values; Using MSChart Control to chart values from INFO tables

Prerequisites and recommendations

This course is for those with an introductory knowledge of VB, AML, and ArcInfo software. Those who do not meet the prerequisites may enroll in the three-day course, *Preparatory AML and Visual Basic for ArcInfo ODE*, which is offered during the same week.

Registrants for this course should know the following:

- The coverage data model
- Basic ArcInfo skills (managing coverages and issuing commands)
- Starting an edit session in ArcEdit
- Writing a simple AML macro
- Using objects, methods, and properties in VB
- Adding controls to a form in VB
- Declaring variables in VB
- Using VB to write code for looping and making decisions

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Oct. 3–4

See training center maps and addresses on pages 56 and 57.

“This course has expanded my personal knowledge base to a greater extent than I could have on my own and in a shorter period of time.”

Working with ArcGrid

Five days

Overview

This five-day course provides the hands-on experience and technical background needed to understand raster GIS and perform cell-based analysis and modeling using ArcGrid software. The course covers data conversion, manipulation, interpolation, query, analysis, modeling, and display. It introduces the ArcGrid tools used for dispersion modeling, least-cost path modeling, visibility analysis, hydrologic modeling, and spatial coincidence modeling of real-world problems. Participants use ArcGrid software's map algebra to manipulate cell-based datasets. They learn the commands and techniques needed to perform spatial queries and analyses and create map products. Attendees also learn to use basic AML tools to enhance ArcGrid processing and automate procedures with simple AML macros.

Audience

This course is for those who work with remote sensing, GIS, environmental analysis, urban analysis, resource management, modeling, or in a related field.

Goals

- Learn ArcGrid commands and functionality
- Display and query grids
- Perform cell-based analysis and data processing
- Learn cell-based modeling basics and techniques
- Convert files from other systems
- Use map algebra
- Perform basic statistical analyses of grid data
- Use basic AML tools for ArcGrid processing
- Link attribute data to spatial data
- Create map displays and products
- Generate surfaces
- Apply hydrologic modeling techniques
- Analyze surface visibility

Topics covered

ArcGrid data model: Directory structure; Discrete vs. continuous data; Value attribute table; Data compression

Grid display and query: Display commands and techniques; Shaded relief; Generating hard copy

Surface data generation and display: Surface generators (trend, inverse distance weighted [IDW], spline, and kriging); Surface-derived grids (slope, aspect, and curvature); Hillshading; Slope-aspect index; ArcTIN™–ArcGrid relationship; Visibility analysis

Georeferencing: Coordinate systems; Resampling; Polynomial coordinate transformation; Rubber sheeting; Projecting grids

Map algebra: Concepts and syntax; Map algebra objects, functions, and operators

Modeling and grid-cell analysis: Built-in modeling functions; Selection and conditional processing; Model types and purposes; Data types and measurement; Spatial coincidence modeling; Shortest-path, least-cost path, dispersion, corridor, and hydrologic modeling

Using AML with ArcGrid: Order of interpretation; Iteration; Writing general purpose ArcGrid tools; Converting scalars to AML variables; Using DOCELL blocks, the WHILE statement, and neighborhood notation

Data conversion: ArcInfo vector coverages and TINs; ERDAS® images; GRASS files; BIL, BIP, RLC, SVF, TIFF, and SunRaster™ formats; DLG and DEM; Image-to-grid conversion

Prerequisites and recommendations

This course emphasizes the technical aspects of using ArcGrid software. Although prior knowledge of ARC concepts is not required, registrants should complete one or more introductory ArcInfo courses or have experience using ArcInfo software before taking this course.

Registrants for this course should know the following:

- Basic operating system skills (copying, deleting, and moving files and directories)
- Basic ArcInfo skills (managing coverages, issuing commands, and running macros)
- Creating a simple display in ArcPlot

Price: \$2,000 (Five days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$13,750. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Aug. 26–30

See training center maps and addresses on pages 56 and 57.

Introduction to ArcView

Two days

Overview

This two-day course provides a conceptual overview and hands-on experience using ArcView 3.x software. It teaches basic ArcView functionality and enables participants to quickly take advantage of the software's powerful display and analysis capabilities. Attendees are introduced to the ArcView GUI and use ArcView to create, edit, display, query, and analyze geographic and tabular data and create presentation-quality maps and charts.

Audience

This course is for those who are new to ArcView 3.x software. No prior knowledge of ArcView 3.x or GIS is required.

Goals

- Display data in a view
- Create and edit data
- Query a database
- Perform geocoding
- Create maps for presentation

Topics covered

ArcView overview: Capabilities and applications; Interacting with the ArcView GUI; Projects and documents; Using ArcView online help

ArcView views and themes: Creating views to display geographic data (themes); Creating themes from x,y coordinates; Setting a view's map projection; Manipulating the symbology and classification scheme for each theme; Labeling themes

ArcView tables: Creating an ArcView table from a variety of tabular data sources; Selecting from a table; Joining and linking multiple tables; Modifying the structure of a table; Editing values in a table; Creating a chart for presenting tabular data

Creating and editing themes: Using ArcView to create shapefiles; Adding and editing shapefile features; Updating attribute information; Geocoding street addresses

Spatial query and analysis: Selecting features based on relationships between multiple themes; Merging theme features

ArcView layouts: Creating a final map for presentation and printing; Combining views, tables, charts, images, north arrows, logos, and scale bars to create a final map

Prerequisites and recommendations

This course is for those with little or no desktop mapping experience; however, registrants should know how to use windowing software.

Those who want to learn about Avenue programming language should attend this course followed by one of the introductory Avenue courses. *Introduction to Avenue* is for nonprogrammers and *Programming with Avenue* is for those with programming experience.

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alaska Anchorage Oct. 7–8	Colorado Boulder Jul. 8–9 Nov. 18–19	Massachusetts Danvers Jul. 17–18 Sep. 18–19 Nov. 13–14	Minnesota St. Paul Sep. 16–17	Ohio Columbus Aug. 5–6	Virginia Vienna Jul. 1–2 Jul. 29–30
California Redlands Jul. 29–30 Aug. 19–20 Sep. 4–5 Oct. 7–8 Nov. 25–26	Illinois Chicago Jul. 22–23 Naperville Nov. 14–15	Missouri St. Charles Jul. 15–16 Nov. 11–12		Texas San Antonio Aug. 5–6 Dec. 16–17	Aug. 26–27 Nov. 25–26
		Michigan East Lansing Aug. 19–20 Oct. 21–22			Washington Olympia Jul. 8–9 Sep. 23–24

See training center maps and addresses on pages 56 and 57.

Advanced ArcView

Three days

Overview

This three-day course offers participants in-depth instruction in ArcView 3.x software's ability to integrate geographic information. Attendees move beyond the basics as they perform GIS analysis using the software's total functionality including new geoprocessing tools and projection utility. The course helps participants become more productive ArcView users by teaching them advanced topics such as using sample scripts and extensions, converting themes into new map projections, and making projects portable. Realistic class projects and challenging hands-on exercises let participants immediately apply their newly acquired skills.

Audience

This course is for experienced ArcView users who want to learn about the advanced features of ArcView that will make them more productive and allow them to get the most out of the software.

Goals

- Align spatial data in views
- Obtain spatial and tabular data
- Manage data
- Create portable projects
- Present data through reports, layouts, or dynamic presentations
- Use Avenue programming language to increase efficiency
- Use sample scripts and extensions
- Perform advanced spatial functions (intersect, clip, and overlay)
- Implement spatial models

Topics covered

Spatial and attribute data: Downloading data from the Web; On-screen digitizing; Converting and importing different data types; Aligning data sources by changing projection or datum; Managing data sources; Using metadata

Portable projects: Understanding the structure of ArcView projects; Delivering projects for others to use

Presenting data: Designing and formatting reports; Presentation-quality layouts; Custom ArcView projects

Using the power of Avenue: Field calculator requests; Sample scripts and extensions; Customizing document GUIs

Proximity analysis: Buffer features; Nearest neighbor analysis; Spatial join

Geoprocessing: Union; Spatial merge; Merging themes; Intersect; Clip; Using functions to analyze data

Spatial modeling: Understanding models; Coding data and assigning weights; Implementing suitability and predictive models

Prerequisites and recommendations

Recent completion of *Introduction to ArcView* or at least three months of experience using ArcView software is required.

Registrants for this course should know the following:

- Basic operating system skills (copying, deleting, and moving files and directories)
- Concept of a shapefile and simple shapefile editing
- Creating and saving projects
- Adding multiple data types as themes to a view
- Setting view properties (map and distance units, projection)
- Applying legends and classifying data
- Creating, editing, and establishing relationships between tables
- Selecting records and features using spatial and tabular methods
- Summarizing tables

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

Alaska
Anchorage
Oct. 9–11

California
Redlands
Aug. 14–16
Sep. 30–Oct. 2
Nov. 6–8

Colorado
Boulder
Jul. 29–31

Illinois
Chicago
Sep. 4–6

Massachusetts
Danvers
Aug. 14–16
Oct. 14–16
Dec. 17–19
Michigan
East Lansing
Nov. 20–22

Minnesota
St. Paul
Jul. 8–10

Missouri
St. Charles
Jul. 17–19
Nov. 13–15

Ohio
Columbus
Aug. 7–9

Texas
San Antonio
Jul. 23–25

Virginia
Vienna
Jul. 31–Aug. 2

Washington
Olympia
Jul. 10–12
Sep. 25–27

See training center maps and addresses on pages 56 and 57.

"ESRI training has been excellent—good teachers, good materials, and good examples that are applicable."

Introduction to Avenue

Two days

This course is available through the ESRI Authorized Training Program (ATP). Visit www.esri.com/atp for a listing of ATP authorized instructors near you.

Overview

This two-day course provides the skills and knowledge needed to use the OOP language, Avenue, to customize the ArcView 3.x GUI. The course employs a task-oriented approach that gives participants the tools they need to become proficient users. Class attendees learn how to use the Customize dialog box and Avenue scripts to create a new customized interface. They write their own scripts to perform different tasks in all areas of GIS implementation. Participants also use Avenue to create, display, and query information and to print hard-copy maps.

Audience

This course is for those with little or no programming experience or who prefer a task-oriented (instead of a function- or programming-oriented) approach. Those with a background in programming may elect to take *Programming with Avenue* instead.

Goals

- Use the basic structure of Avenue
- Access and modify the ArcView GUI
- Write simple Avenue scripts to perform common tasks
- Use Avenue with common ArcView objects such as themes, tables, shapes, and graphics
- Fine-tune a custom application to prepare for delivery

Topics covered

Avenue software overview: What Avenue is and how to use it to customize ArcView

Customizing the GUI: Changing menus, buttons, and tools to create a custom GUI

Writing and running Avenue scripts: Creating a script and running it from a custom GUI

Avenue statements: Constructing Avenue statements from objects and requests; Avenue online help

Displaying themes: Looping and branching statements to test theme visibility; Managing theme display

Shapes and graphics: Associating, creating, and modifying

Querying data: Attribute and spatial query techniques for themes and tables; Building expressions; Helping the user draw a selection area

Creating and manipulating data: Adding features and attributes to an existing theme; Displaying edited themes using new data

Making maps: Using the layout document to build a template and construct a final map

Final project: Integrating new skills and creating a custom GUI

Prerequisites and recommendations

Completion of *Introduction to ArcView* or equivalent experience is required.

Registrants for this course should know the following:

- Navigating within ArcView
- ArcView functionality (buttons, tools, and menus)
- ArcView shapefile data model
- Querying spatial and tabular data
- Creating and editing spatial and tabular data
- ArcView layout document

Price: \$800 (Two days)

Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

Programming with Avenue

Three days

Overview

This three-day course offers the hands-on experience needed to take advantage of the powerful features of the OOP language, Avenue. Participants use Avenue to customize the ArcView 3.x interface and to write and execute scripts (programs) using the ArcView Script Editor. They write scripts to perform ArcView 3.x operations such as manipulating documents, classifying and symbolizing map features, creating graphics on the display, querying theme attributes, and editing values in a table. The course covers OOP concepts such as objects, classes, and requests. It also provides examples that illustrate the specifics of working with Avenue. Participants work through exercises using Avenue to gain practical experience in writing and executing scripts to perform common ArcView tasks.

Audience

This course is for those who are familiar with basic programming concepts (e.g., assigning variables, branching, and looping) and code execution (e.g., compiling and debugging) but want to learn how to customize ArcView and create custom applications.

Goals

- Modify the ArcView interface
- Navigate OMDs
- Work with different types of objects and requests
- Construct Avenue statements
- Use Avenue to perform standard GIS tasks
- Create extensions and use the Dialog Designer (optional)

Topics covered

Overview of Avenue: Avenue capabilities and applications

Customizing the GUI: Modifying menus, buttons, and tools with the Customize dialog box

Avenue scripts: Using the Script Editor to write, compile, debug, and run Avenue scripts; Using events to run scripts; How scripts are associated with events

Basics of OOP language: Objects, classes, and requests defined; Avenue object-request syntax; Constructing Avenue statements; Using the hypertext format help system

Understanding events: Control events; Document events; Assigning scripts to events

Branching and looping: Creating a branching statement and looping structure in an Avenue script; Using Boolean, list, and dictionary objects

Working with the application and project document: Manipulating the ArcView application; Running scripts from the application; Customizing ArcView document types; Setting project properties

Working with tables: Creating tables from new or existing data sources; Adding and updating records; Working with a selection; Modifying fields in a table; Joining and linking tables

Reading and writing text files: Creating files; Accessing existing files; Reading and writing operations

Creating shapes and graphics: Constructing shapes and graphics; Setting symbol style and color; Drawing on the display; Using shapes to select features

Themes and legends: Adding a new theme; Constructing a legend; Classifying and symbolizing theme features

Changing the document GUI with scripts: Going beyond the Customize dialog box to change menus, buttons, and tools based on conditions of the ArcView session

Prerequisites and recommendations

Registrants should complete *Introduction to ArcView* or have equivalent knowledge and be familiar with basic programming concepts (e.g., variables, statements, and parameters) before taking this course.

Registrants for this course should know the following:

- Creating and accessing documents in an ArcView 3.x project
- ArcView functionality (buttons, tools, and menus)
- ArcView shapefile data model
- Querying spatial and tabular data
- Creating and editing spatial and tabular data

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Jul. 31–Aug. 2
Aug. 21–23

Colorado
Boulder
Jul. 10–12

Virginia
Vienna
Jul. 1–3

See training center maps and addresses on pages 56 and 57.

Working with ArcView Image Analysis

Two days

Overview

This two-day course introduces the ArcView Image Analysis extension, which enables users to display, enhance, and analyze satellite images, aerial photography, and raster GIS data in an ArcView 3.x environment. Participants learn to display and visually manipulate remotely sensed data, import and display images from numerous sensors, and read and write multiple data formats. The course also covers the basics of categorizing and classifying satellite images to create land use and land cover mapping that is useful for various applications (e.g., agriculture, forestry, or urban development).

Audience

This course is for those who need to use ArcView Image Analysis to display and analyze remotely sensed imagery and raster GIS data within the ArcView 3.x environment.

Goals

- Perform direct read/fast display of images
- Manage image themes and files
- Enhance image display
- Extract features from images
- Utilize vegetation index
- Develop subsets and mosaics of images
- Categorize and filter images
- Achieve spatial alignment and rectification of images
- Detect changes between temporal images

Topics covered

Basics of ArcView Image Analysis: Overview of the extension; Areas of application; Software functionality and interface

Introductory remote sensing theory: Basic concepts of remote sensing; Image resolution; Common sensor systems; Viewing ArcView Image Analysis themes

Efficient and effective techniques to manage raster data: Working with image files; Importing; Direct read/write; Management functions

Image enhancement and processing: Augmentation of image appearance for better interpretation and analysis; Radiometric and spatial enhancements

Rectification and mosaicking: Spatial alignment of ArcView Image Analysis themes to maps, other images, or real-world coordinates and projections; Combining images together to create one large image

Feature extraction and finding like areas: The rapid creation of map features from regions of spectral similarity on an image; Converting extracted features into graphics or shapefiles

Vegetation index: Spectral properties of vegetation; How to use Normalized Differential Vegetation Index images in the extension

Categorization: Classifying images by natural spectral groupings

Change detection: Using temporal images to detect, locate, and monitor change over a given location

Prerequisites and recommendations

Completion of *Introduction to ArcView* or equivalent experience is required. Prior knowledge of remote sensing is not necessary.

Registrants for this course should know the following:

- Basic operating system skills (copying, deleting, and moving files and directories)
- Using ArcView menus, buttons, and tools
- Using ArcView online help

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Nov. 25–26

See training center maps and addresses on pages 56 and 57.

Working with ArcView Spatial Analyst

Three days

Overview

This three-day course explores how the ArcView Spatial Analyst extension uses raster and vector data in an integrated environment. The course teaches basic raster concepts and shows how to use ModelBuilder™ functionality to create, run, and edit spatial models. It emphasizes problems that are best solved in a raster environment such as surface analysis and distance measurement. Participants are shown how to use the raster tools in ArcView Spatial Analyst and learn how to convert between feature- and grid-based themes. They also access such additional functionality as cost–distance analysis and hydrologic analysis by issuing Avenue requests with the Map Calculator.

Audience

This course is for those who use ArcView 3.x but need to learn how to use ArcView Spatial Analyst with ModelBuilder to work with raster and vector data.

Goals

- Apply the grid data model
- Access ArcView Spatial Analyst
- Convert data to grid format
- Manage grids
- Implement map algebra functions
- Use ArcView Spatial Analyst for distance modeling
- Create continuous surfaces
- Perform surface hydrology functions
- Apply basic modeling concepts
- Implement models

Topics covered

Basics of ArcView Spatial Analyst: Overview of the extension; Understanding raster concepts; ArcView Spatial Analyst interface

Grids: Comparing grid themes and feature themes; Querying grid themes

Structure of grid themes: How to create grids; Grid storage and management

Aligning themes: Grid registration and georeferencing; How projection affects analysis; Importing and exporting grids

Conducting surface analyses: Calculating density; Choosing an interpolation method; Interpolating a continuous grid from sample points; Contours and hillshading; Visibility analysis

Issuing Avenue requests from the GUI: Map algebra functions; Writing expressions; Expression syntax; Avenue request rules and help

Calculating distance measurements: Euclidean distance; Cost–distance; Finding the least-cost path

Surface hydrology: Identifying watershed basins; Determining surface runoff characteristics

Designing and implementing GIS models: Spatial modeling concepts and issues; Introduction to ModelBuilder functionality

Prerequisites and recommendations

Completion of *Introduction to ArcView* or equivalent experience is required. Programming knowledge is not necessary.

Registrants for this course should know the following:

- Basic operating system skills (copying, deleting, and moving files and directories)
- Adding, renaming, and deleting themes
- Setting view properties (map and distance units, projection)
- Displaying themes using the Legend Editor
- Using ArcView menus, buttons, and tools
- Performing queries
- Converting themes to shapefiles
- Selecting records in views and tables
- Using ArcView online help

Price: \$1,200 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$8,250. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Aug. 21–23

Colorado
Boulder
Nov. 20–22

See training center maps and addresses on pages 56 and 57.

“Well-paced class, knowledgeable instructor, and good class materials.”

Programming MapObjects with Visual Basic

Three days

Overview

This three-day course provides the foundation for becoming a successful MapObjects developer. The course offers a conceptual overview of the MapObjects Control and hands-on experience using its set of programmable ActiveX automation objects within the VB programming environment. Participants build VB applications that use MapObjects components to create maps and perform attribute and geographic (spatial) queries, address matching, and database editing. The course enables VB programmers to develop MapObjects software-enhanced applications.

Audience

This course is for experienced developers of Windows-based software who want to add map display and basic GIS functionality into the applications they build, both for deployment as stand-alone applications or on the Web.

Goals

- Create or enhance VB applications with the MapObjects Control
- Navigate the MapObjects OMD
- Use specific objects, methods, and properties provided by MapObjects components
- Use different types of data with MapObjects components
- Add a map control to a VB form
- Add map layers
- Thematically map layers
- Display data, in real time, that moves across a map
- Edit map features and attribute data
- Turn an address into a location on a map
- Project maps
- Export and print maps
- Deploy a MapObjects application

Topics covered

Overview of MapObjects: MapObjects Control and the types of functions it supports; MapObjects components and the OMD; How MapObjects Control works with VB

Adding a map to an application: Map control and map layer objects; Coordinates; Positioning and scaling (pan and zoom) operations

Data sources: Working with data sources that are used to add map layers and attribute tables

Rendering a map: Working with MapRenderers to present attributes in a database with special colors and symbols

Presenting dynamic data on a map: Adding a Tracking layer to show time series or real-time data moving across a map

Finding out about features on a map: Using data access objects to retrieve information and calculate statistics about what is on a map; Querying a map to select features with common attributes or those with a special geographic relationship

Database editing: Editing attribute tables and locational data (e.g., boundary lines and point locations) using Recordset and MapLayer objects

Address matching: Using address matching objects to turn addresses into point locations on a map; Learning what is required for a street map and for addresses

Projections: Converting a map from one projection to another; Creating a shapefile metadata projection file

Map output: Getting maps out of an application and into other applications and printers

Deploying a MapObjects application: Learning about the components needed to deploy a MapObjects application

Prerequisites and recommendations

This course is for a wide audience; however, registrants should have a working knowledge of VB. Registrants without programming experience are encouraged to take *Introduction to Visual Basic for ESRI Software* (Web-based course) before attending this class.

Registrants for this course should know the following VB fundamentals:

- Adding standard controls
- Writing syntax for objects, methods, and properties
- Declaring procedures and variables
- Setting objects and variables
- Writing decision constructs and loops

Price: \$1,350 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$9,525. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Sep. 4–6

See training center maps and addresses on pages 56 and 57.

Programming MapObjects—Java Standard Edition new

Three days

Overview

This new three-day course teaches experienced Java developers how to build applications using MapObjects—Java Standard Edition. Participants use MapObjects components and classes to produce maps, query attribute and geographic (spatial) data, accomplish spatial operations on feature geometry, perform database editing, and create applets that use data sources published in ArcIMS Services.

This course is in development. For updated course information visit gis.esri.com/training/courselist.cfm

Audience

This course is designed for experienced Java developers who are interested in developing Java-based client mapping applications using MapObjects.

Prerequisites and recommendations

Java is not taught in this course. Intermediate programming experience in Java is mandatory. This is not an introductory class.

Price: \$1,350 (Three days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$9,525. Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California

Redlands

Oct. 9–11

Dec. 11–13

Virginia

Vienna

Sep. 4–6

See training center maps and addresses on pages 56 and 57.

Introduction to Maplex

Two days

Overview

Name placement in maps is considered the most time-consuming aspect of map production. Maplex software has solved this problem by introducing the Rulebase Editor with which users can design their own rules of how to place labels on maps. This two-day course teaches participants the intricate functionalities of Maplex and how efficiently they can use this software to produce highly aesthetic, cartographically legible, and useful maps.

Audience

This course is for those who want to use Maplex software to improve the quality of name placement as well as symbology in their designed maps.

Goals

- Load data into Maplex
- Change projection in Maplex
- Create a Rulebase
- Symbolize map features
- Label map features
- Export the finished map

Topics covered

Introduction to Maplex: Why use it and how it works; Input and output file formats; Maplex interface, terminology, project, and Rulebase; Data Manager; Datasets; Feature Classification Code concept; Placement qualities

Loading data into Maplex: Data file prerequisites and recommendations; Topological structuring in Maplex; Data Manager Feature Class Field names; The map extent in Maplex

Navigating the Rulebase Editor: Rulebase characteristics, Edit menu; Rulebase Editor tabs; Go to menu

Rulebase Editor Label Placement: Labeling styles, offsets, shifts, conflict resolution, and quality; Handling parameters and abbreviations; Label stacking and buffer; Label and feature weight; Deletion priority; Font properties and output

Label editing: Edit labels; Managing edits; Changing label properties; Dealing with and searching for unplaced labels

Advanced capabilities: Adding new and custom fonts; Graticule alignment of labels; Projections; Multilabeling techniques, stacking, and separating

Map export: Exporting by the File menu or the Rulebase Editor; Exporting labels and features or data labels only; Export settings

Street map labeling: Understanding the STREET feature type; Resolving conflicts; Stacking and buffering labels

Prerequisites and recommendations

This course is for professionals with a working knowledge of ArcView or ArcInfo software (or a similar mapping software package).

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

Client-site options

If time permits, participants can apply Maplex to their own data at the end of day two.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Oct. 14–15

Virginia
Vienna
Jul. 29–30

See training center maps and addresses on pages 56 and 57.

System Architecture Design for GIS

Two days

Overview

This two-day course introduces a proven system architecture design methodology for developing successful GIS design and implementation techniques. This methodology was developed and tested during years of successful ESRI system design consulting efforts. The objective of this course is to share this methodology to help users improve performance of existing and future GIS environments. The system design models and configuration guidelines discussed provide class participants with a proven path to successful GIS solutions. Lectures and hands-on exercises help those responsible for GIS system architecture decisions select a system design that will support GIS user performance requirements.

Audience

This course will appeal to those in charge of developing and maintaining hardware or software systems designs and to those in the business of supporting software or application development and technical marketing for system design, testing, and configuration of client solutions. It also provides an excellent conceptual framework for anyone in the position of supporting and securing GIS hardware or software solutions. Senior architecture consultants will benefit from the GIS design methodology presented. GIS managers will come away with a better understanding of system architecture and hardware selection criteria.

Goals

- Understand the relationships that are available to support successful GIS solutions
- Learn where ESRI software solutions fit in an evolving GIS environment
- Learn how to integrate ESRI software in a distributed enterprise environment
- Learn how to provide high-performance remote user access requirements
- Learn how to integrate GIS applications with legacy data sources
- Understand the prerequisites and recommendations that must be completed before selecting hardware solutions
- Learn how to identify user locations and existing network communications
- Learn how to summarize user requirements to support system architecture design

- Identify system components that contribute to application performance
- Learn how to select an optimum enterprise design solution
- Learn how to identify relative performance of Windows NT and UNIX platforms
- Apply practical sizing models for selecting central application and data servers
- Learn practical design guidelines for network communications
- Understand the process for conducting a system design review and distributed GIS hardware solution

Topics covered

System design strategies

GIS software solutions

Network communications

GIS product architecture

GIS user needs

System sizing fundamentals

System sizing tools

System implementation

Prerequisites and recommendations

Registrants should have an interest in understanding GIS product architecture and how today's computer technologies can support successful GIS solutions. It may also be helpful to review the white paper titled System Design Strategies at www.esri.com/library/whitepapers/pdfs/sysdesig.pdf

Price: \$800 (Two days)

Classes can be taught onsite at a client's facility (up to 12 participants) for a fixed price of \$5,500.* Special pricing is available to the United States federal government and to qualifying educational institutions, libraries, and museums. Contact the ESRI Learning Center for eligibility requirements. Prices are subject to change without notice.

**For onsite training of less than three days, add \$500 to the total charge.*

Related courses

See the Learning Guide at the beginning of this catalog.

JULY–DECEMBER 2002 CLASS SCHEDULE

California
Redlands
Sep. 9–10
Nov. 4–5

Colorado
Boulder
Aug. 1–2

North Carolina
Charlotte
Sep. 26–27

Virginia
Vienna
Aug. 28–29
Nov. 14–15

Washington
Olympia
Oct. 31–Nov. 1

See training center maps and addresses on pages 56 and 57.

How to Register

Registration Application

A completed registration application is required from each student. Registrations are processed on a first-come, first-served basis. It is recommended that you submit your application at least one month before your class begins. Before you mail or fax this form, contact the ESRI Learning Center at 909-793-2853, extension 1-1585, for course availability. The registration application must be signed by the student to ensure that it is processed promptly. Incomplete or unsigned registration forms will not be processed and may delay class reservations. You will receive an acknowledgment letter notifying you of your payment and seating status. Class schedules and availability are normally confirmed approximately 10 business days before the scheduled start date.

Payment

Prepayment is required and may be made by check (payable to ESRI), credit card, preexisting contractual obligation, federal government training request, or purchase order (cash is not accepted). To complete your registration, proof of payment is required. Purchase orders for less than \$800 will be accepted only from United States federal, state, and local government agencies; United States educational institutions; and Fortune 500 companies. Please mail or fax your payment and registration form to the ESRI Learning Center in Redlands, California. Applicable sales tax will be charged based on the location of the class in some cases.

Data Processing Fee and Refunds

Sales tax will be charged where applicable. The tuition amount includes a \$100 nonrefundable data processing fee per class. The tuition less the data processing fee will be refunded if we receive notice of cancellation at least six business days prior to the class start date. Full tuition will be charged to students who cancel five days or less before the class start date or who fail to appear for the class.

Transfers and Substitutions

Class registrants may transfer to another class up to two times at no charge, after which a \$100 fee will be assessed for each subsequent transfer. Student substitutions (a student's place in class is filled by another person from the same organization) are allowed, provided that the ESRI Learning Center is notified in advance.

Class Schedule Changes and Cancellations

It is sometimes necessary to change the dates a class is offered or to cancel a class. Registrants are contacted at the earliest opportunity in the event of a scheduling change or cancellation.

Travel

Transportation to the training site is the registrant's responsibility.

ESRI assumes no responsibility for nonrefundable travel arrangement losses resulting from course scheduling changes or cancellations.

Lodging

Registrants are provided a class location map and list of area hotels. Registrants are responsible for making their own lodging arrangements.

Course Materials

All course materials are provided at the training site.

Recommended Attire

Casual dress is suggested.

Registration Application

STUDENT NAME AND ORGANIZATION ADDRESS (one registration form per person, please)

Student name	Organization and department		
Organization street address <small>(no P.O. boxes)</small>	City	State/Country	ZIP Code
Telephone	Fax	Customer number <small>(if known)</small>	
Provide your e-mail address if you would like to receive training registration correspondence and our newsletter _____			
How did you learn about this class? <input type="radio"/> ESRI Mailer <input type="radio"/> ESRI Web Site <input type="radio"/> ArcNews™/ArcUser™ <input type="radio"/> Phone/Fax <input type="radio"/> Other _____			

BILLING INFORMATION (if different than above)

Organization	Contact person		
Address	City	State/Country	ZIP Code
Telephone	Fax		

COURSE NAME	DATE	LOCATION	PRICE *
1.			
2.			
3.			

PAYMENT INFORMATION (Please do not send cash.)

Credit card no.:	<input type="text"/>	<input type="radio"/> Visa <input type="radio"/> MasterCard <input type="radio"/> American Express <input type="radio"/> Discover	Exp. date: <input type="text"/>
Contract no.:	<input type="text"/>	I understand and agree to the terms and conditions of this application.	
Gov. req. no.:	<input type="text"/>	Signature <small>(required)</small> _____	
P.O. no.:	<input type="text"/>		
Check no.:	<input type="text"/>		

A completed registration application is required from each student. Incomplete or unsigned registration forms will not be processed and may delay class reservations. Before you mail or fax this form, contact the ESRI Learning Center (909-793-2853, extension 1-1585) for course availability. Registrations are processed on a first-come, first-served basis. We recommend that you submit this registration information at least one month prior to the date your class begins. Prepayment is required and may be made by check (payable to ESRI), credit card, preexisting contractual obligation, federal government training request, or purchase order. (We do not accept cash.) Purchase orders for less than \$800 will be accepted only from United States federal, state, and local government agencies; United States educational institutions; and Fortune 500 companies. Sales tax will be charged where applicable. The tuition amount includes a \$100 nonrefundable data processing fee per class. You will receive an acknowledgment letter notifying you of your payment and seating status. ESRI assumes no responsibility for nonrefundable travel arrangement losses resulting from course scheduling changes or cancellations.

Telephone: 909-793-2853, extension 1-1585 • Fax: 909-335-8233 • Web: www.esri.com/training

Registration Procedure

Step 1. Photocopy this page

Step 2. Fax this form to
909-335-8233

Step 3. Mail a copy of this
form and your payment to
ESRI
File #54630
Los Angeles, CA 90074-4630

*Registrations are accepted on a first-come,
first-served basis, so fax your registration early.*

*Sales tax will be charged where applicable.
The tuition amount includes a \$100 nonrefundable data processing fee per class.

ESRI regional training centers

Maps are current as of the catalog print date. Visit www.esri.com/training/trainingmaps/trainingmaps.html to view the most current training site information.

ESRI Learning Center

380 New York Street
Redlands, California 92373-8100
Phone: 909-793-2853, extension 1-1585
Fax: 909-335-8233



ESRI-Denver

(located in Boulder, Colorado)
4875 Pearl East Circle, Suite 200
Boulder, Colorado 80301-6103
Phone: 303-449-7779
Fax: 303-449-8830



ESRI-San Antonio

14100 San Pedro Avenue, Suite 210
San Antonio, Texas 78232-4362
Phone: 210-499-1044
Fax: 210-499-4112



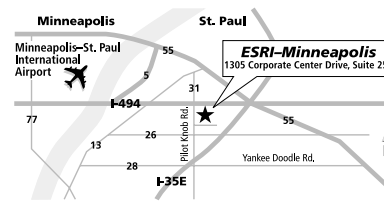
ESRI-Boston

(located in Danvers, Massachusetts)
100 Conifer Hill Drive, Suite 305
Danvers, Massachusetts 01923-1168
Phone: 978-777-4543
Fax: 978-777-8476



ESRI-Minneapolis

(located in St. Paul, Minnesota)
Location may change after September 2002
1305 Corporate Center Drive, Suite 250
St. Paul, Minnesota 55121-1204
Phone: 651-454-0600
Fax: 651-454-0705



ESRI-St. Louis

(located in St. Charles, Missouri)
820 South Main Street
St. Charles, Missouri 63301-3306
Phone: 636-949-6620
Fax: 636-949-6735



ESRI-Boston Satellite Office

(located in New York, New York)
55 Broad Street, 14th Floor
New York, New York 10004-2501
Phone: 212-349-3700
Fax: 212-509-3650



ESRI-Olympia

606 Columbia Street NW, Suite 300
Olympia, Washington 98501-1099
Phone: 360-754-4727
Fax: 360-943-6910



ESRI-St. Louis Satellite Office (Columbus)

(located in Gahanna, Ohio)
64 Granville Street, Suite 201
Gahanna, Ohio 43230-3064
Phone: 614-428-8996
Fax: 614-428-8698



ESRI-Charlotte (New Location)

3325 Springbank Lane, Suite 200
Charlotte, North Carolina 28226-3343
Phone: 704-541-9810
Fax: 704-541-7620



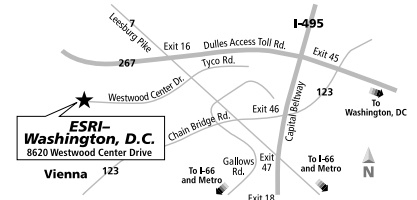
ESRI-Philadelphia

(located in King of Prussia, Pennsylvania)
1006 West 9th Avenue
King of Prussia, Pennsylvania 19406-1206
Phone: 610-337-8380
Fax: 610-337-8318



ESRI-Washington, D.C.

(located in Tysons Corner, Vienna, Virginia)
8620 Westwood Center Drive
Vienna, Virginia 22182-2214
Phone: 703-506-9515
Fax: 703-506-9514



Maps are not to scale.

Other ESRI training centers

For detailed maps, visit www.esri.com/training/trainingmaps/trainingmaps.html

Alabama

Samford University

ESRI Training Lab, Room 210
University Center Annex
Birmingham, Alabama 35229

Alaska

Alaska Pacific University

4101 University Drive
Carr-Gottstein Building, Room 225
Anchorage, Alaska 99508

University of Alaska, Southeast

Math and Science Program Unit
11120 Glacier Highway
Juneau, Alaska 99801

California

Chabot College

25555 Hesperian Boulevard
Building 700, Room 705
Hayward, California 94545

California State University, Sacramento

Amador Hall, Room 312
6000 J Street
Sacramento, California 95819-6003

Florida

Florida Atlantic University

Center for Visual Planning Technology
Higher Education Complex
111 East Las Olas Boulevard, Room 613
Fort Lauderdale, Florida 33301

University of South Florida

Florida Center for Community Design and Research
School of Architecture and Design
3702 Spectrum Boulevard
Tampa, Florida 33612

Georgia

University of Georgia

Information Technology Outreach Services
Chicopee Complex, Suite 2076
1180 East Broad Street
Athens, Georgia 30602-5418

Atlanta Regional Commission

40 Courtland Street NE
Atlanta, Georgia 30303

Hawaii

Windward Community College

Hale Kuhina Lab/Hale 'Imiloa Lab
45-720 Kea'ahala Road
Kane'ohe (Oahu), Hawaii 96744

Idaho

Boise State University

Department of Geosciences/GIS
1910 University Drive
Boise, Idaho 83725

Illinois

Great Arc Technologies, Inc.

205 West Wacker Drive, Suite 1320
Chicago, Illinois 60606

Northern Illinois University

Business and Industry Center
1120 E. Diehl Road, Suite 110
Naperville, Illinois 60563

Kansas (Kansas City)

University of Kansas, Edwards Campus

12600 Quivira Road, Room 220A
Overland Park, Kansas 66213

Maryland

University of Maryland, Baltimore County

Computer Certification Training Center
Baltimore, Maryland 21244

Michigan

Michigan State University

Center for Remote Sensing and GIS
204 Manley Miles Building
East Lansing, Michigan 48823

Montana

Montana State University

GIS Lab, Room 209
209 AJM Johnson Hall
Bozeman, Montana 59717

Nevada

Community College of Southern Nevada

Henderson Campus
Building B, Room 214B
700 College Drive
Henderson, Nevada 89015-8419

New Mexico

University of New Mexico

Centennial Science and Engineering Library
Albuquerque, New Mexico 87131

New York

Applied GIS

137 Jay Street
Schenectady, New York 12305

Oregon

University of Oregon

1101 Kincaid Street
McKenzie Hall, Room 445
Eugene, Oregon 97403

Portland Community College

1626 SE Water Avenue, Room 308C
Portland, Oregon 97214

Chemeketa Community College

4000 Lancaster Drive NE, Building 4, Room 272
Salem, Oregon 97309

South Carolina

University of South Carolina

Department of Geography
Callcott Social Sciences Center, Room 302
South Bull Street
Columbia, South Carolina 29208

Tennessee

Smart Data Strategies

357 Riverside Drive
Franklin, Tennessee 37064

Utah

Automated Geographic Reference Center

5130 State Office Building
Salt Lake City, Utah 84114

Virginia

Radford University

Cook International Education Building
Room 124/125
Radford, Virginia 24142-6938

Virginia Commonwealth University

Life Sciences Building
Center for Environmental Studies
1000 West Cary Street, Room 105
Richmond, Virginia 23284

Washington

King County Technology Learning Center

King County Information and Telecommunications
Services Department
700 Fifth Avenue, Key-IA-2300
Seattle, Washington 98104

Web-Based Courses

The ESRI Virtual Campus offers GIS education and training over the Internet. ESRI Web-based courses cover a variety of topics in GIS technology, GIS applications, and GIScience. GIS technology courses provide instruction on ESRI software. GIS application courses focus on applying GIS technology to finding solutions in a particular field. GIScience courses teach the theory behind GIS. Course authors are academic, GIS technology, and industry subject matter experts who work with education specialists to design, develop, and test the courses.

ESRI Virtual Campus courses are ideal for motivated individuals who want or need flexibility in their training schedule or location and for those who cannot afford the time away from work to attend traditional classes. Organizations use ESRI Virtual Campus courses to leverage their investments in instructor-led training by having staff members trained in ESRI instructor-led classes mentor those who take Web-based training. Web-based courses combine hands-on experience, interactivity, conceptual material, and instructional resources to create a rich learning environment. Accessibility, convenience, timeliness, and the ability to control one's own learning experience in a dynamic learning environment are the hallmarks of ESRI Virtual Campus courses.

A typical ESRI Virtual Campus course includes four to six learning modules consisting of concepts, examples, hands-on exercises, challenges, and exams for reinforcing the content. Everything needed to complete the courses and earn official ESRI certificates of completion is available online, and some courses include downloadable trial editions of ESRI software. Many campus courses offer the first learning module free of charge. Visit campus.esri.com/free to see a listing of free learning modules.

An educational discount is available worldwide to students and educators who have a qualifying e-mail address. In the United States, quantity discounts are available for purchases of more than nine courses at a time. The ESRI Virtual Campus also offers annual subscriptions that grant an organization access to all campus courses for a flat fee.


Visit campus.esri.com for course descriptions, pricing, registration information, or to subscribe to the ESRI Virtual Campus newsletter. Worldwide, courses can be purchased online with a credit card or, in the United States only, by calling 1-800-447-9778. Annual subscriptions are available through an ESRI sales representative or by calling 1-800-447-9778.

GIS Web Workshops Added to ESRI Virtual Campus
ESRI software users can now receive GIS training on focused topics. GIS Web Workshops consist of short, recorded technical presentations by subject matter experts plus transcribed excerpts. Some workshops also include a software exercise, animated exercise solution, exam, and certificate of completion. Visit campus.esri.com for information on available workshops.

Web-Based Courses

GIS Technology

ArcGIS Desktop

Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)	61
Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)	62
Learning ArcGIS II: Presenting Information (for ArcView 8, ArcEditor 8, and ArcInfo 8)	63
Creating, Editing, and Managing Geodatabases	64
What 's New in ArcInfo 8	65
Migrating from ArcView 3.x to ArcView 8 <i>Free</i>	66
Working with Rasters in ArcGIS 	67
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ArcIMS

Learning ArcIMS	70
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Introduction to ArcInfo using ArcTools	71
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Introduction to ArcView Business Analyst 1.1	75
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Working with ArcView Image Analysis	79
Working with ModelBuilder <i>Free</i>	80

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Business

Introduction to Successful Marketing using ArcView 3.x	83
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Mapping for Health Care Professionals using ArcView 3.x	84
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Natural Resources

Characterizing Forests using ArcView 3.x	86
Conservation GIS using ArcView 3.x	87
Spatial Analysis in Agriculture: A GIS Approach (for ArcView 3.x)	88
Spatial Analysis of Geohazards using ArcGIS 	89
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Public Safety



GIS Applications in Disaster Mitigation and Recovery 	91
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State and Local Government

Getting Started with Census Data (for ArcView 3.x)	92
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GIScience


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Understanding Map Projections and Coordinate Systems 	97
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Professional Practice

Planning for a GIS	99
Protecting Your Investment in Data with Metadata	100

Spatial Analysis

Introduction to Geostatistical Analysis 	101
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Learning ArcGIS I *(for ArcView 8, ArcEditor 8, and ArcInfo 8)*

Overview

This six-module course introduces ArcGIS and provides the foundation for becoming a successful ArcView 8, ArcEditor 8, or ArcInfo 8 user. Students learn how to use ArcMap, ArcCatalog, and ArcToolbox and see how they work together to provide a complete GIS software solution. The course covers fundamental GIS concepts as well as how to create and edit spatial data. Students also learn how to work with tables, query a GIS database, and present data clearly and efficiently using maps and charts.

Many of the topics covered in this course are similar to those in *What's New in ArcInfo 8* and *Migrating from ArcView 3.x to ArcView 8*. Students who complete this course should not enroll in *What's New in ArcInfo 8* or *Migrating from ArcView 3.x to ArcView 8*.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcGIS

Displaying and Georeferencing Data in ArcGIS

Working with Spatial Data in ArcGIS

Working with Attributes in ArcGIS

Querying Your Database in ArcGIS

Presenting Data in ArcGIS

Audience

This course is for those who are new to ArcGIS and geographic information systems in general.

Goals

- Display feature and tabular data
- Query features using logical expressions
- Find features using spatial relationships
- Edit spatial data
- Import features into a geodatabase
- Create new feature classes
- Create maps, reports, and graphs

Prerequisites and recommendations

None.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape® 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

“This course was extremely valuable in order for me to ‘get rolling’ with ArcGIS.”

Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)

by ESRI and Elizabeth Fletcher King

Earn Continuing Education Units (CEUs) for Penn State Edition courses

Penn State Edition courses are customized ESRI Virtual Campus courses that are supported by instructors in Penn State's Department of Geography. Penn State Edition courses adopt a developmental approach in which students are expected to demonstrate increasing competence as the course progresses. Penn State Edition courses involve 24 to 48 hours of student activity (four to eight hours per learning module) and approximately one to two hours of student–instructor communication (10 to 20 minutes per module). The primary medium for student–instructor communications will be threaded discussions, accessed directly from links in the course materials. Instructors will answer questions about concepts and exercises and provide feedback on selected student assignments. Upon completion of a Penn State Edition course, students receive a certificate of completion and earn CEUs from Penn State.

Overview

This six-module course introduces ArcGIS and provides the foundation for becoming a successful ArcView 8, ArcEditor 8, or ArcInfo 8 user. Students learn how to use ArcMap, ArcCatalog, and ArcToolbox and see how they work together to provide a complete GIS software solution. The course covers fundamental GIS concepts as well as how to create, edit, and georeference spatial data. Students also learn how to manipulate tabular data, query a GIS database, and present data clearly and efficiently using maps and charts.

Many of the topics covered in this course are similar to those in *What's New in ArcInfo 8* and *Migrating from ArcView 3.x to ArcView 8*. Students who complete this course should not enroll in *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)*, *What's New in ArcInfo 8*, or *Migrating from ArcView 3.x to ArcView 8*.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcGIS

Displaying and Georeferencing Data in ArcGIS

Working with Spatial Data in ArcGIS

Working with Attributes in ArcGIS

Querying Your Database in ArcGIS

Presenting Data in ArcGIS

Audience

This course is for those who are new to ArcGIS and geographic information systems in general.

Goals

- Display feature and tabular data
- Georeference spatial data
- Query features using logical expressions
- Find features using spatial relationships
- Edit spatial data
- Import features into a geodatabase
- Create new feature classes
- Create maps, reports, and graphs

Prerequisites and recommendations

None.

Price: \$300

The first learning module of this course is free. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module consists of approximately four to eight hours of online instruction, though actual hours may vary by student.

Continuing Education Units

Students who complete this course will receive four CEUs from Penn State University.

Related courses

See the Learning Guide at the beginning of this catalog.

About the coauthor

Elizabeth Fletcher King is a GIS specialist and instructor in the Gould Center for Geography Education and Outreach, an academic support unit of the Department of Geography at the Pennsylvania State University. Ms. King came to Penn State in 1999 after working as a GIS analyst for a private water/wastewater engineering firm, where she managed a wide range of GIS projects, from water and sanitary sewer conversion to 911/rural addressing. At Penn State, she contributes to the Geography Department's online Certificate in Geographic Information Systems, which is offered through Penn State's World Campus. Ms. King has been an ESRI authorized ArcView instructor since 1997.

Learning ArcGIS II: Presenting Information *(for ArcView 8, ArcEditor 8, and ArcInfo 8)*

Overview

This five-module course presents important concepts and functionality for successfully working with ArcGIS, building on the foundation provided in *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)*. With further exploration of ArcMap, students focus on working with maps, layers, labels, annotation, geocoding, spatial analysis, and advanced options for cartographic display. Examples and exercises use data from a variety of application areas.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Displaying Layers

Working with Labels and Annotation

Displaying Locations from Tabular Data

Analyzing Data with ArcMap

Presenting Data

Audience

This course is for those who want to further their basic ArcGIS skills. It provides an introduction to cartographic display and shows how to prepare data for maps and analysis.

Goals

- Manage geographic data
- Set layer properties
- Display maps using a variety of symbols
- Create custom symbols, lines, and markers
- Place labels using a variety of labeling options
- Create annotation
- Perform geocoding
- Display points and lines from event tables
- Produce high-quality maps and reports
- Perform spatial analysis

Prerequisites and recommendations

Students should have completed one of the following ArcGIS foundation courses: *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses), *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course), or *Migrating from ArcView 3.x to ArcView 8* (instructor-led or Web-based course); or have read *Getting to Know ArcGIS Desktop* (ESRI software workbook).

Price: \$100

Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Creating, Editing, and Managing Geodatabases

Overview

This five-module course discusses the capabilities and advantages of storing geographic data in a geodatabase. Students learn details of the geodatabase data model and, in particular, how to create personal geodatabases and add data to them; convert existing geographic data to the geodatabase model; define spatial domains; create attribute domains; use relationship classes; and perform analysis on geometric networks. Advanced topics covered in the course include creating, editing, and managing subtypes, relationship classes, and geometric networks in ArcEditor 8.1 and ArcInfo 8.1.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introducing the Geodatabase

Creating and Editing Features

Creating Geodatabases

Adding Behavior to a Geodatabase

Working with Geometric Networks

Audience

This course is for those who want to learn how to create and manage geodatabases using ArcGIS.

Goals

- Create personal geodatabases
- Set spatial domains
- Load data into a geodatabase
- Create geodatabase feature datasets
- Create and edit geodatabase feature classes
- Create and edit geodatabase annotation
- Create and use attribute domains
- Manage geodatabase topology
- Perform geodatabase network analysis
- Create subtypes (ArcEditor 8.1 and ArcInfo 8.1 users only)
- Create relationship classes (ArcEditor 8.1 and ArcInfo 8.1 users only)
- Create and edit geodatabase networks (ArcEditor 8.1 and ArcInfo 8.1 users only)

Prerequisites and recommendations

Students should have completed one of the following ArcGIS foundation courses: *Learning ArcGIS I (for ArcView 8, ArcEditor 8, or ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses), *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course), or *Migrating from ArcView 3.x to ArcView 8* (instructor-led or Web-based course); or have read *Getting to Know ArcGIS Desktop* (ESRI software workbook).

Price: \$80

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcEditor 8.1, ArcInfo 8.1, or ArcView 8.1 or higher

Students using ArcEditor or ArcInfo can complete all course exercises. Students using ArcView can complete two-thirds of the course exercises. Refer to the course description at campus.esri.com/coursecatalog for specific exercises that can be completed with ArcView.

Length

Each learning module is approximately two hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

What's New in ArcInfo 8

Overview

This six-module course introduces the features and architecture of ArcInfo 8. Students learn about the three new Windows-based applications (ArcMap, ArcCatalog, and ArcToolbox), the new data models, and the geoprocessing server.

Although this course covers many of the same topics as *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)*, the software is covered in more detail with less emphasis on basic GIS concepts. Students who complete this course should not enroll in *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)*.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcInfo 8

Display and Query in ArcMap

Using ArcCatalog and ArcToolbox

Editing Data in ArcMap

Working with Geodatabases and Networks

Customizing ArcInfo 8

Audience

This course is for experienced ArcInfo users who have ArcInfo 8.1 installed on their computer system and are interested in learning about the software's new functionality and features.

Goals

- Preview and load data in ArcCatalog
- View, query, and edit geographic data in ArcMap
- Perform spatial analysis tasks in ArcToolbox
- Create graphs and reports
- Create production-quality maps
- Work with geodatabases
- Create and analyze networks
- Customize the ArcInfo interface
- Create custom macros in the Visual Basic Editor

Prerequisites and recommendations

Students should be familiar with ArcInfo software and GIS concepts.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcInfo 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Migrating from ArcView 3.x to ArcView 8 *Free*

Overview

This free six-module course introduces ArcView 3.x users to the features and architecture of ArcView 8. Students learn how the new ArcView 8 terminology and features compare with ArcView 3.x, how to use the new Windows-based applications (ArcMap, ArcCatalog, and ArcToolbox), and how these applications work together. Students also learn how to create and work with tables, edit spatial data, as well as query a GIS database, perform spatial analysis, and present data clearly and efficiently using maps and charts.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView 8

Displaying Data in ArcView 8

Working with Data in ArcView 8

Working with Tables in ArcView 8

Querying Your Database in ArcView 8

Presenting Data in ArcView 8

Audience

This course is for ArcView 3.x users who want to learn ArcView 8.

Goals

- Display feature and tabular data
- Query features using logical expressions
- Find features using spatial relationships
- Edit spatial data
- Import features into a geodatabase
- Create new feature classes
- Create maps, reports, and graphs

Prerequisites and recommendations

Knowledge of ArcView 3.x is required.

Price

There is no charge for this course.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Working with Rasters in ArcGIS new

Overview

This new two-module course introduces raster datasets and how to display them in ArcGIS. Students learn how rasters represent geographic information and the difference between thematic and image rasters. Several hands-on exercises give students the opportunity to explore a variety of raster datasets using basic ArcGIS functions. The course provides a foundation for more advanced work with rasters in ArcGIS Spatial Analyst and ArcGIS 3D Analyst™ extensions.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Raster Basics

Displaying Rasters in ArcGIS

Audience

This course is for those who are familiar with ArcGIS and want to understand and display raster datasets.

Goals

- Understand how rasters represent geographic features with cells
- Determine whether a vector or raster data model is most appropriate
- Differentiate between continuous and discrete thematic rasters
- Determine whether cell values represent nominal, ordinal, interval, or ratio data, and how the type of data affects raster analysis
- Understand and display raster properties
- Enhance raster appearance using brightness, contrast, and transparency
- Display multiband rasters as color composites and change band combinations to aid visual interpretation

Prerequisites and recommendations

Students should have a basic understanding of ArcGIS and be familiar with the following:

- Previewing data in ArcCatalog
- Adding a folder connection to the ArcCatalog tree
- Adding and symbolizing vector data layers in ArcMap
- Opening a layer table

Students may find it helpful to take *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor, 8, and ArcInfo 8)* and *Learning ArcGIS II: Presenting Information (for ArcView 8, ArcEditor, 8, and ArcInfo 8)* (Web-based courses) or *Introduction to ArcGIS I (for ArcView 8, ArcEditor, 8, and ArcInfo 8)* (instructor-led course); or read *Getting to Know ArcGIS Desktop* (ESRI software workbook).

Price: \$40

Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module is approximately two hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Learning ArcGIS 3D Analyst

Overview

This six-module course shows how to use the ArcGIS 3D Analyst extension within the ArcMap and ArcCatalog environments. The course teaches what a surface model is and shows how to create raster and vector surfaces. Working mostly with models of terrain, students will display surfaces in three-dimensional perspective, symbolize them, and set three-dimensional properties such as sun position. Students will create realistic models by draping aerial photographs over surfaces and displaying ordinary two-dimensional features, such as rivers, roads, and buildings, in three dimensions. They will perform three-dimensional geographic analysis such as finding steepest paths, determining intervisibility between locations on a surface, and calculating volumes.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

ArcGIS 3D Analyst Basics

Scene and Layer Properties

Symbolizing and Analyzing Data

Creating TINs and 3D Features

Deriving Raster Surfaces

Interpolating Raster Surfaces

Audience

This course is designed for those who want to apply three-dimensional visualization and analysis techniques to their spatial data. Anyone who works frequently with terrain models or large-scale physical models (buildings, utilities, etc.) may be interested in this course.

Goals

- Understand the structure of three-dimensional data types such as TINs, rasters, and three-dimensional features
- Use ArcCatalog to preview and manage three-dimensional data
- View and navigate data in three-dimensional perspective
- Explore three-dimensional analysis techniques such as finding steepest paths, calculating surface volume, and determining visibility between points
- Set three-dimensional viewing properties for two-dimensional data
- Create three-dimensional surface models and three-dimensional features
- Derive and display analytical surfaces such as slope, aspect, and view shed from elevation models
- Create and display surface models by interpolation from point data

Prerequisites and recommendations

Students should have taken one of the following ArcGIS foundation courses: *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses), *Introduction to ArcGIS (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course), or *Migrating from ArcView 3.x to ArcView 8* (instructor-led or Web-based course); or have read *Getting to Know ArcGIS Desktop* (ESRI software workbook). Students who are new to raster data should take *Working with Rasters in ArcGIS* before taking this course.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher and ArcGIS 3D Analyst 8.1 or higher

Length

Each learning module is approximately two hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Learning ArcGIS Spatial Analyst

Overview

This six-module course introduces the ArcGIS Spatial Analyst extension. Students learn how to produce and control raster data using the ArcGIS Spatial Analyst extension toolbar within the ArcMap environment. They will be exposed to a variety of surface creation techniques such as creating hillshade relief maps, slope and aspect surfaces, density surfaces, distance surfaces, and interpolating surfaces from sample points. Students are also introduced to map algebra and the mathematical functions and operators available through the Raster Calculator. This course prepares students for raster modeling and for working with other ArcGIS extensions such as ArcGIS 3D Analyst and ArcGIS Geostatistical Analyst.

Visit campus.esri.com/course catalog for detailed course and learning module descriptions.

Learning module(s)

Getting Started with ArcGIS Spatial Analyst

Analyzing Surfaces

Working with Map Algebra

Interpolating Raster Surfaces

Mapping Distance and Density

Using Cell, Neighborhood, and Zonal Statistics

Audience

This course is for those who use ArcGIS (ArcView 8, ArcEditor 8, or ArcInfo 8) but want to do more than view raster data. Anyone who wants to create rasters, use rasters to identify spatial relationships, develop suitability models, and calculate the cost of travel over a surface will be interested in this course. Students who have completed *Introduction to ArcView Spatial Analyst* (Web-based course) will already be acquainted with many of the concepts and techniques presented in this course.

Goals

- Learn the basics of cell-based modeling using ArcGIS Spatial Analyst operators and functions
- Generate slope, aspect, and hillshade surfaces
- Perform viewshed analysis
- Interpolate surfaces from point data
- Convert vector data to raster data
- Perform local, focal, and zonal statistical analysis
- Create straight-line and cost-weighted distance surfaces
- Learn how to find the least-cost path
- Create surfaces using map algebra expressions and the Raster Calculator
- Reclassify raster data
- Specify the working environment for raster analysis

Prerequisites and recommendations

Students should have taken one of the following ArcGIS foundation courses: *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses), *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course), or *Migrating from ArcView 3.x to ArcView 8* (instructor-led or Web-based course); or have read *Getting to Know ArcGIS Desktop* (ESRI software workbook). Students who are new to raster data should take *Working with Rasters in ArcGIS* before taking this course.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher and ArcGIS Spatial Analyst 8.1 or higher

Length

Each learning module is approximately two hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Learning ArcIMS

Overview

This six-module course presents how to use ArcIMS for serving maps over the Internet. Students learn about client/server technology and system design concept and are given helpful resources for supported Web server and servlet installation and configuration issues. The course teaches how to get an Internet mapping site up and running quickly and how to create maps for the Internet. Students will learn how to create, implement, and manage MapServices and design map-centric Web sites. In addition, the course introduces ArcXML and the customization of HTML and Java viewers.

Visit campus.esri.com/course catalog for detailed course and learning module descriptions.

Learning module(s)

Getting Started with ArcIMS

Using ArcIMS Author

Designing ArcIMS Web Sites

Working with ArcIMS Administrator

Understanding ArcXML

Customizing ArcIMS Viewers

Audience

This course is for those who want to create MapServices on the Internet as well as provide interactivity and GIS functionality to Web sites. This course will especially benefit Web site developers and managers in addition to GIS professionals.

Goals

- Access ArcIMS resources for getting help
- Create map content for the Internet
- Generate and start MapServices
- Use ArcXML to modify map content and functionality
- Use collaborative tools including MapNotes and EditNotes
- Design a Web site that includes MapServices
- Create a Web site using HTML Viewers
- Create a Web site using Java Viewers
- Use ArcExplorer 3 to view MapServices

Prerequisites and recommendations

Students should have a basic understanding of GIS concepts and be familiar with HTML and Web site creation. Before taking this course, ArcIMS and a supported Web server and servlet engine must be installed and correctly configured at the student's site. This course does not teach Web server/servlet installation and configuration. The first learning module of this course provides resources for finding out about supported Web servers, servlet engines, and available installation and configuration documentation. Students must have administrative access to a working copy of ArcIMS.

Price: \$100

The first learning module of the course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcIMS 3.1 or higher

ArcIMS-supported Web server

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

"I recommend that all users, whether expert or not, take courses from the Virtual Campus in order to learn the 'overview' or to fine-tune their expertise. As a subscription member, you cannot beat the 'bang for the buck.' I have made these courses mandatory for all my employees."

Introduction to ArcInfo using ArcTools

Overview

This six-module course introduces ArcInfo software using the ArcTools interface. Students learn how to create and maintain geographic data, convert existing data to ArcInfo software-supported data formats, manipulate tabular data, construct and query a GIS database, and create basic maps.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcInfo

Understanding and Designing ArcInfo Databases

Getting Spatial Data into ArcInfo

Working with Attribute Data in ArcInfo

Constructing and Querying Data Layers in ArcInfo

Analyzing and Presenting Data in ArcInfo

Audience

This course is for those who already have ARC/INFO 7.1 or higher installed on their computer system and are interested in learning ArcInfo and GIS using the ArcTools interface.

Goals

- Create spatial features
- Georeference spatial data
- Edit spatial data
- Create and maintain feature topology
- Manipulate INFO data files
- Join and relate tables
- Perform edgematching
- Merge coverages
- Extract features from coverages
- Display feature and tabular data
- Query features using logical expressions
- Find features using spatial relationships
- Perform spatial analysis
- Create maps

Prerequisites and recommendations

None.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ARC/INFO 7.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Introduction to ArcView

Also available in German and Portuguese

Overview

This six-module course provides the foundation for becoming a successful ArcView 3.x software user. Students learn how to create, display, and manipulate spatial and tabular data. In addition, the course shows how to use ArcView 3.x software's spatial analysis tools to solve many day-to-day problems and how to present data clearly and effectively using maps and charts.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView

Querying Data in ArcView

Working with Tables in ArcView

Analyzing Spatial Relationships using ArcView

Presenting Information in ArcView

Creating Your Own Data in ArcView

Audience

This course is for those who are new to ArcView 3.x software.

Goals

- Create and edit tabular data
- Change map projections and coordinate systems
- Measure distances and area
- Create maps and charts
- Analyze spatial relationships

Prerequisites and recommendations

None.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

"I had a basic concept of what GIS was and had seen it utilized. However, it was only through taking this course that I really understood how useful, powerful, and user-friendly it can be. Hands-on is the only way to learn to appreciate GIS, and I've only touched the surface."

Programming with Avenue

Also available in Portuguese

Overview

This six-module course teaches students how to write Avenue scripts and create custom applications. Students learn the basics of OOP and how to create simple Avenue scripts. They work with Avenue to customize the ArcView 3.x interface, edit tables and text files, manipulate views and themes, and create dialogs and extensions. The course also shows how to build applications using the Dialog Designer extension.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of Avenue

Understanding Classes and Events

Working with Tables in Avenue

Working with Views and Layouts in Avenue

Customizing docGUIs and Creating Extensions

Using the Dialog Designer

Audience

This course is for those who need to learn how to customize ArcView 3.x and create custom ArcView 3.x applications.

Goals

- Comprehend OOP syntax
- Understand ArcView object classes and subclasses
- Use online help for Avenue
- Customize the ArcView GUI using Avenue
- Use the Script Editor
- Create and edit tables with Avenue
- Create and edit shapefiles with Avenue
- Control data display and select features
- Build custom applications with the Dialog Designer
- Create and print layouts using Avenue

Prerequisites and recommendations

Students should have a basic understanding of ArcView 3.x and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView 3.x Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

"I cannot wait to complete this course as I am finding it extremely useful in my workplace already. The concepts and exercises explored in this course are extremely easy to follow and are delivered in a clear and easy-to-understand fashion. Overall, I am very satisfied with the Virtual Campus layout and course content."

Introduction to ArcView 3D Analyst

Overview

This six-module course shows how to use ArcView 3D Analyst software to display, create, and analyze spatial data in three dimensions. Students integrate surface models (grids and triangulated irregular networks), feature data, and images in a three-dimensional viewing environment. They create continuous surfaces from sample data and analyze various properties of those surfaces including slope, steepest downhill path, and visibility. Students also learn how to use Avenue, ArcView 3.x software's programming language, to increase the power of ArcView 3D Analyst. They discover how ArcView 3D Analyst can be used with ArcView Spatial Analyst to create a full-featured three-dimensional raster analysis environment.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView 3D Analyst

Displaying Data in ArcView 3D Analyst

Creating Data in ArcView 3D Analyst

Using ArcView 3D Analyst Analysis Tools

Using Avenue with ArcView 3D Analyst

Advanced Techniques in ArcView 3D Analyst

Audience

This course is for those who use ArcView 3.x but need to learn how to use ArcView 3D Analyst to display or analyze geographic data in three dimensions.

Goals

- Display spatial data in a three-dimensional viewing environment
- Create surface models of terrain and other geographic phenomena
- Analyze surfaces and perform volumetric calculations
- Write Avenue scripts to extend ArcView 3D Analyst functionality
- Integrate raster analysis capabilities of ArcView Spatial Analyst with ArcView 3D Analyst

Prerequisites and recommendations

Students should have a basic understanding of ArcView and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView 3D Analyst 1. Students who register for the course can download a copy of ArcView 3D Analyst 1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Introduction to ArcView Business Analyst 1.1

Overview

This six-module course shows, with practical examples, how geographic analysis is relevant to business and teaches the basics of working with GIS. Using ArcView Business Analyst 1.1 software, students create study areas and analyze demographic and business data to create trade areas, locate potential customers and competitors, and generate reports and maps. In addition, students learn how to customize and get more functionality out of ArcView Business Analyst with Avenue scripts and ArcView 3.x extensions.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView Business Analyst

Getting Started with ArcView Business Analyst

Analyzing Your Data with ArcView Business Analyst

Presenting Your Work

Beyond the Wizards

One Step Beyond: Adding Functionality to ArcView Business Analyst

Audience

This course is for those who own and need to learn how to effectively use ArcView Business Analyst 1.1.

Goals

- Prepare a study area for analysis
- Display customers, competitors, and businesses on a map
- Determine the trade areas of businesses
- Locate the most profitable customers, identify their demographic characteristics, and find other areas with potential customers like them
- Calculate market penetration
- Evaluate potential business sites
- Create routes
- Generate standard and custom reports
- Produce presentation-quality maps
- Customize the ArcView Business Analyst interface

Prerequisites and recommendations

None.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView Business Analyst 1.1

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Introduction to ArcView Network Analyst

Overview

This six-module course shows how to prepare data for network analysis, create routes and directions, find the closest facility, and define service areas. Students also learn how to extend the functionality of ArcView Network Analyst software by using Avenue, ArcView 3.x software's programming language.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView Network Analyst

Designating Stops for ArcView Network Analyst

Creating Routes and Directions with ArcView Network Analyst

Finding Facilities and Service Areas with ArcView Network Analyst

Preparing Data for ArcView Network Analyst

Getting the Most from ArcView Network Analyst

Audience

This course is for those who use ArcView 3.x but need to learn how to use ArcView Network Analyst to find routing, service areas, and facilities solutions.

Goals

- Solve complex routing problems
- Find the closest facility
- Create service areas
- Measure the accessibility of sites
- Prepare linear data for network analysis
- Model travel costs, turns, and overpasses
- Locate stops, events, sites, and facilities along a route
- Customize directions
- Make a network matchable
- Match addresses
- Create point themes from tabular lists
- Use Avenue with ArcView Network Analyst

Prerequisites and recommendations

Students should have a basic understanding of ArcView and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView Network Analyst 1 or higher. Students who register for the course can download a copy of ArcView Network Analyst 1.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Introduction to ArcView Spatial Analyst

Overview

This six-module course shows how ArcView Spatial Analyst software supports the use of raster and vector data in an integrated environment. It teaches basic raster concepts and introduces GIS models. The course emphasizes problems that are best solved in a raster environment such as surface analysis and distance measurement. Students use raster tools in ArcView Spatial Analyst to convert between feature- and grid-based themes, create surfaces, extract data from surfaces, visualize surfaces, reclassify grids, and access additional functionality by issuing Avenue requests with the Map Calculator. Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView Spatial Analyst

Understanding the ArcView Spatial Analyst Grid Model

Using Map Algebra in ArcView Spatial Analyst

Grid Database Issues in ArcView Spatial Analyst

Introduction to Surface Analysis with ArcView Spatial Analyst

Using ArcView Spatial Analyst Proximity and Hydrologic Tools

Audience

This course is for those who use ArcView 3.x but have problems that are best solved in a raster environment. Anyone who needs to create grid-based themes, integrate vector and raster data, create surfaces as well as perform surface analysis, proximity analysis, and hydrologic analysis will be interested in this course.

Goals

- Understand ArcView Spatial Analyst raster analysis functionality and its relationship to ArcView software
- Create surface models of terrain and other geographic phenomena
- Enter expressions into the Map Calculator to access additional ArcView Spatial Analyst functionality
- Query, classify, and visualize grid-based data
- Import, export, create, and manage grid-based data
- Georeference, transform, and resample grids
- Use functions at the local, focal, zonal, and global levels
- Edit and remove anomalies from grid-based data
- Analyze surfaces and perform proximity and hydrologic analysis

Prerequisites and recommendations

Students should have a basic understanding of ArcView and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView Spatial Analyst 1.1 or higher. Students who register for the course can download a copy of ArcView Spatial Analyst 1.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Introduction to ArcView Tracking Analyst

by LittonTASC

Overview

This four-module course teaches students how to use ArcView Tracking Analyst software to monitor objects in real time and analyze historical tracking data. Real-time data tracking provides critical information to workers in the field and to those managing time-sensitive operations. Analyzing historical tracking data allows students to replay events repeatedly (slowing down and speeding up the replay as needed), note changes in data over time, and predict future behavior of tracked objects. The course also teaches advanced techniques for creating custom applications with ArcView Tracking Analyst.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of ArcView Tracking Analyst

Tracking Theme Properties and Symbolization

Receiving Real-Time Data and Converting Data

Advanced Functions of ArcView Tracking Analyst

Audience

This course is for those who use ArcView 3.x but need to learn how to use ArcView Tracking Analyst to track changes in geographic locations or attributes of locations over time.

Goals

- Understand the difference between how real-time data and historical data are displayed
- Add a tracking theme to a view
- Replay historical data
- Customize a tracking theme's legend
- Save tracking themes
- Convert other theme types to tracking themes
- Set up local and custom tracking connections
- Create tracking connection models

Prerequisites and recommendations

Students should have a basic understanding of ArcView 3.x and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$60

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView Tracking Analyst 1. Students who register for the course can download a copy of ArcView Tracking Analyst 1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

LittonTASC (www.tasc.com) provides advanced information technology solutions for government and businesses worldwide in areas such as geospatial and imagery systems development and integration, information technologies, modeling and simulation, image archive and viewing, and weather services. Founded in 1966, LittonTASC is headquartered in Reading, Massachusetts, and has more than 25 offices throughout the United States and the United Kingdom.

Working with ArcView Image Analysis

by ESRI and ERDAS

Overview

This six-module course teaches how to use ArcView Image Analysis software for image data access, visualization, georectification and mosaicking, analysis, and feature extraction and classification. The course begins with an overview of basic image and remote sensing science concepts. Then, through hands-on exercises, students are introduced to the six basic functional areas of ArcView Image Analysis and work with both continuous and thematic images. Finally, students perform an integrated exercise that applies the software functions presented in the course to a real-world application. Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Understanding Imagery and Image Analysis

Accessing and Displaying Image Data

Rectifying and Mosaicking Images

Extracting and Classifying Features

Image Analysis: Mapping Vegetation and Detecting Change

Applying ArcView Image Analysis

Audience

This course is for those who use ArcView 3.x but need to learn how to use ArcView Image Analysis to display, analyze, or manipulate geographic images.

Goals

- Understand basic remote sensing concepts such as spectral resolution, radiometric resolution, and reflectance characteristics
- Know whether to import or directly read an image data format
- Enhance images using a variety of tools such as brightness and contrast adjustment, image histograms, smoothing, and sharpening
- Georectify an image so that features on an image are aligned with features on a map
- Find areas with similar characteristics and extract features from an image
- Analyze the health or type of vegetation in an image by creating a “greenness map”
- Classify image pixels using unsupervised and supervised classification techniques
- Identify areas that have changed over time using a pair of continuous images or a pair of thematic images
- Create a mosaic of multiple images

Prerequisites and recommendations

Students should have a basic understanding of ArcView and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView Image Analysis 1.1. Students who register for the course can download a copy of ArcView Image Analysis 1.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the coauthor

ERDAS, Inc. (www.erdas.com), a division of Leica Geosystems, is the world's leading provider of geographic imaging products and related services that help organizations visualize, manipulate, analyze, measure, and integrate any type of geographic imagery and geospatial information into two- and three-dimensional environments. In 1978 ERDAS pioneered the first PC-based image processing system and over the years has set the standard for multifunctional geographic imaging systems. Corporate and international headquarters are located in Atlanta, Georgia.

Working with ModelBuilder *Free*

Overview

This free one-module course provides an overview of spatial modeling and describes the anatomy of a spatial model in ModelBuilder. In addition, students learn essential concepts of raster overlay analysis; the mechanics of building, modifying, and executing spatial models; and the details of spatial functions including vector to raster data conversion and slope derivation.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

ModelBuilder Basics

Audience

This course is for urban and environmental planners, landscape architects, and anyone who uses raster data for spatial modeling and decision support. It is also a good introduction to raster data for those who have previously worked with vector data in a GIS.

Goals

- Understand what a spatial model is
- Learn how a spatial model is represented in ModelBuilder
- Understand fundamental concepts of raster data

Prerequisites and recommendations

Students should have a working knowledge of ArcView 3.x and may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook). Experience with ArcView Spatial Analyst software is helpful but not required.

Price

There is no charge for this course.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.2–3.3 and ArcView Spatial Analyst 2

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Exploring Geography Network *Free, Updated*

Overview

This free, updated one-module course introduces Geography Network and provides students with the information they need to efficiently access its extensive resources. Students learn how to search for different types of geographic content, examine map data and metadata, and download data to their computer. In addition, students learn how to access, display, query, and analyze streaming spatial data, called MapServices, in ArcMap and ArcExplorer.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of Geography Network

Audience

This course is for those interested in learning how to use Geography Network to find and access geospatial content on the Internet.

Goals

- Find data and MapServices on the Internet
- Use ArcCatalog to connect to MapServices stored on Internet servers
- Integrate MapServices with other data in ArcMap map documents
- Symbolize and perform analysis on MapService layers in ArcMap
- Add MapServices to ArcExplorer 3 Catalog
- Symbolize and perform analysis on MapService layers in ArcExplorer 3

Prerequisites and recommendations

None.

Price

There is no charge for this course.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher (for students using ArcExplorer 3.1); Internet Explorer 5.x (for students using ArcView, ArcEditor, or ArcInfo)

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher and ArcExplorer 3.1

Length

This course takes approximately one to two hours to complete, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

“I like the Virtual Campus because you can work at your own pace when you have the time available. Even if you have to stop for a while because it gets busy at work, you can come back and review what you have done and then continue.”

Introduction to Visual Basic for ESRI Software

Overview

This six-module course teaches the fundamental concepts of VB programming language and how to write VB applications. Students create an application interface using different controls and write procedures and functions to make the controls operational. In addition, the course covers programming with COM objects.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Getting Started with Visual Basic

Understanding Branching and Looping

Using Variables, Procedures, and Functions

Enhancing Your Applications

Working with Class Modules and COM Objects

Debugging and Deploying Your Applications

Audience

This course is for those who lack VB experience but are interested in acquiring VB programming skills. These fundamental programming skills prepare students for courses that teach customization of ArcView 8, ArcEditor 8, ArcInfo 8, ARC/INFO 7.1.2 using ODE, and MapObjects to create mapping applications.

Goals

- Understand event-driven programming
- Understand object-oriented programming
- Comprehend various VB controls
- Access online help for VB
- Control program flow
- Use variables and constants
- Use procedures and functions
- Work with multiform forms
- Work with standard modules
- Work with menus
- Work with arrays and collections
- Work with class modules and COM objects
- Debug, deploy, and package finished applications

Prerequisites and recommendations

None.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

Microsoft Visual Basic 6.0 Professional or Enterprise edition and Microsoft Developer Network (MSDN™) Library

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

“In the past I have used various ‘self-teaching’ books to learn Visual Basic. I found the material in this course presented in a much better way. As a novice, I’ll take this course any day over those books.”

Introduction to Successful Marketing using ArcView 3.x

by Christine Koontz, Ph.D., and Dean Jue

Overview

This six-module course demonstrates how ArcView 3.x software is a powerful tool that public and private sector managers can use to make successful marketing decisions based on digital geographic datasets. Marketing analysis requires a detailed breakdown of the socioeconomic and demographic status of the immediate locale and the surrounding regional population and a subsequent estimation and determination of the geographic market range. In the past, marketing analyses were difficult and required many hours of overlaying paper maps. Today, thanks to current GIS technology, such analyses are much easier and affordable even to small businesses. Through realistic exercises and examples based on the operations of a fictional bank services company, this course shows how GIS can facilitate activities that marketers perform daily. The course correlates with the tried and true principles of marketing presented in a marketing class. Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to Spatial Marketing

The Marketing Information System and GIS

The Internal and External Marketing Environments

The Marketing Mix Strategy: Product and Price

The Marketing Mix Strategy: Place and Promotion

The Marketing Audit

Audience

This course is designed for two audiences—marketing students and business professionals—faced with marketing decisions that need to be made. It shows how GIS can facilitate activities that marketers perform daily.

Goals

- Understand the philosophy of marketing
- Display customers and competitors on a map
- Create service areas around business outlets
- Analyze the demographic characteristics of a given market
- Find geographic areas matching a demographic profile
- Assess the internal and external forces that affect an organization and its marketing strategy
- Create dynamic maps that communicate the results of marketing analyses

Prerequisites and recommendations

None; however, students may find it helpful to take the free learning module of *Introduction to ArcView* (Web-based course).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView 3.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the authors

Dr. Christine Koontz is a research associate at Florida State University, Florida Resources and Environmental Analysis Center, GeoLib Program where she teaches graduate marketing and management classes. She is corecipient of the Loleta Fyan Award from the American Library Association (ALA) for utilizing GIS technology to better measure public library branch market area size.

Mr. Dean Jue is director of technical assistance at Florida State University, Florida Resources and Environmental Analysis Center, GeoLib Program and GIS cochair for the Library and Information Technology Association (LITA). He is corecipient (with Dr. Koontz) of the Loleta Fyan Award from the ALA and received the LITA Frederick G. Kilgour Award for Research in Library and Information Technology for his work on developing and applying new technologies to improve public library services.

Mapping for Health Care Professionals using ArcView 3.x

by Zvia Segal Naphtali, Ph.D.

Overview

This five-module course provides an overview of the conceptual, analytical, and technical issues involved in working with geographic data, health data, and GIS software. The course shows how GIS can be used as a decision making tool in conjunction with public health indicator data and demographic data. Topics covered include working with GIS to map health data, evaluate geographic patterns of disease and accessibility of health services, manage emergency response, and perform site selection for health care facilities.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Getting Your Feet Wet with ArcView and Health Care Data

Thematic Mapping: Investigating the Spatial Distribution of Low Birth Weight

Address Geocoding: Getting Health Care Data on the Map

Evaluating Accessibility to Cardiovascular Care

The Geography of Environmental Health Risks

Audience

This course is for public health, health care, and human services professionals who are considering using GIS to improve decision making in their organizations. It is also recommended for college and university students.

Goals

- Explore examples and exercises demonstrating the many uses of GIS in health care and human services delivery planning
- Learn how GIS can be used in epidemiology and public health monitoring
- Master basic GIS concepts
- Map public health indicators and disease clusters
- Display service facilities on a map
- Work with health care and census demographic data to explore relationships among disease incidence, socioeconomic factors, and environmental factors
- Identify optimal areas for the delivery of specific health services based on the health and demographic characteristics of the surrounding population
- Discover the value of making spatially informed decisions to improve the fit between resources and needs and for monitoring and evaluating outcomes

Prerequisites and recommendations

None; however, students may find it helpful to take the free learning module of *Introduction to ArcView* (Web-based course).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView 3.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Dr. Zvia Segal Naphtali is an adjunct clinical assistant professor at the Robert F. Wagner Graduate School of Public Service, New York University (NYU), where she teaches data management, statistics, and GIS. Her course *On the Applications of Geographic Information Systems in Health Care* was developed with a grant from the Curriculum Development Challenge Fund (CDCF), an award given by the President of NYU and the CDCF committee. Dr. Naphtali is also data manager of The New York City Nonprofits Project (of Community Studies of New York, Inc./InfoShare) and is involved in a groundbreaking study whose outcome will include a service atlas with maps highlighting the spatial distribution of nonprofit organizations throughout New York City's neighborhoods (www.nycnonprofits.org). Dr. Naphtali is the founder and president of Resource Mobilization Inc., a consulting firm specializing in statistical and demographic analysis and GIS mapping applications.

The Geography of Health Care Planning and Marketing *(for ArcView Business Analyst 1.1a)*

by Greg Pugh

Overview

This six-module course introduces the various ways ArcView Business Analyst 1.1a can be used by health care industry professionals to optimize service delivery and identify new opportunities. Easy-to-use, wizard-driven ArcView Business Analyst is a powerful tool for health care planners and marketers who want to find solutions using the power of GIS maps and analyses, yet do not need to learn the complex science behind the software. As the health care industry continues to change and competition continues to grow, this course provides students with several key GIS strategies to add value to their business spatial studies.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to Health Care Planning and Marketing

Increasing Access to Health Care

Identifying Community Health Needs

Health Provider Analysis

Assessing Health Markets

Site Selection and Routing Applications in Health Care

Audience

This course is appropriate for those working in the health care industry who have a general knowledge of GIS. Hospital and health care professionals, health department and hospital association staff, government health agency personnel, medical personnel, independent consultants, medical researchers, and students will find this course of interest.

Goals

- Display patient and provider data on maps
- Determine market areas based on patient and provider locations
- Query and summarize health data by geographic area
- Generate reports of health indicators by geographic area
- Use charts to show characteristics of patients and health services
- Create demographic profiles of patients
- Identify potential patients and markets using demographic data provided with ArcView Business Analyst 1.1a
- Perform drive-time analyses to increase access to health care
- Create maps to align patients with providers
- Find the fastest routes to health service facilities
- Perform site selection analyses to find optimal locations for health service facilities

Prerequisites and recommendations

Students should have a general, but not necessarily extensive, knowledge of GIS and ArcView Business Analyst 1.1a. Students may find it helpful to take *Introduction to ArcView Business Analyst 1.1* (Web-based course) or *Introduction to ArcView* (instructor-led or Web-based course), or read *Getting to Know ArcView GIS* (ESRI software workbook). Familiarity with the health care industry, particularly from the provider perspective, is beneficial.

Price \$100

The first learning module is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView Business Analyst 1.1a

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. Greg Pugh is director of corporate planning at Louisville, Kentucky-based Jewish Hospital HealthCare Services (JHHS), a regional network providing health care services at 10 hospitals and 35 locations throughout Kentucky and southern Indiana. JHHS is well known for quality and advanced medical care—the first hand transplant in the United States and surgery for the first totally implantable replacement heart device were performed at JHHS. The Corporate Planning Department is responsible for planning, marketing, and strategy development for the entire JHHS network.

Mr. Pugh has 15 years of clinical and administrative health care experience. He has been a GIS user for 10 years and has applied GIS technology in a number of different market development projects throughout his career. Mr. Pugh earned an associate of health sciences in respiratory therapy from the University of Louisville, a bachelor's of business administration in finance from the University of Louisville, and a masters of business administration from Vanderbilt University. He is a registered respiratory therapist and a certified respiratory therapy technician. He is a member of the College for Healthcare Executives.

Characterizing Forests using ArcView 3.x

by Glen Jordan, RPF

Overview

This six-module course shows how forestry managers use GIS to characterize forests with maps, numbers, tables, and charts. Students use actual forest inventory data to map forest attributes, calculate timber and nontimber values, assess clear-cutting activities, calculate forest landscape metrics, delineate management units, and stratify forest stands.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Mapping Forest Attributes

Calculating Forest Values

Assessing Harvest Activities

Measuring Forest Landscapes

Defining Management Units

Compiling Forest Strata

Audience

This course is for those who use ArcView 3.x but need to learn how to apply ArcView to forestry. It uses advanced ArcView techniques such as map overlay, buffering, and Avenue scripts.

Goals

- Create effective thematic maps
- Use Avenue scripts to calculate feature geometry, identify polygons inside a region, and measure distances
- Distinguish quantitative and qualitative forest characterizations
- Use GIS techniques to describe clear-cutting activity
- Identify and form forest patches
- Distinguish measures of landscape composition and configuration (pattern) including patch density, Simpson's Diversity Index, and the Mean Nearest Neighbor measure of dispersion
- Delineate and characterize forest management units such as a riparian forest or a mature coniferous forest
- Perform and interpret map overlay
- Stratify forest stands

Prerequisites and recommendations

Students should have a basic understanding of ArcView 3.x and may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook). Knowledge of forestry data and terminology is recommended.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView 3.x Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. Glen Jordan is professor of forestry at the University of New Brunswick in Canada. His teaching responsibilities include forest management, forest mensuration, forest dynamics, GIS, map analysis techniques, and computer methods for foresters.

Two one-year sabbaticals have permitted Mr. Jordan to remain abreast of computer technology advances. A sabbatical with the New Brunswick Department of Natural Resources, site of ESRI's first ArcInfo software installation, was his introduction to GIS. Another sabbatical with MacMillan Bloedel Ltd. in British Columbia added industrial application experience.

Conservation GIS using ArcView 3.x

by the Conservation GIS Consortium

Overview

This six-module course uses actual applications and conservation data to teach ArcView 3.x software and solve common conservation problems. Through realistic exercises, students study the distribution of grizzly bears, use satellite and other types of image data, conduct a watershed analysis, analyze potential environmental impacts of a proposed timber sale, and examine potential mineral development. Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Analyzing Habitat Loss for Endangered Species

Evaluating Mineral Potential and Development

Watershed Analysis I

Watershed Analysis II

Environmental Analysis of a Proposed Timber Sale

Assessing Data Quality

Audience

This course is for those who need to learn how to use ArcView 3.x to analyze conservation data.

Goals

- Map the distribution of wildlife
- Analyze land use trends over time
- Examine spatial relationships between wildlife and land use
- Map mining activities over a region
- Study spatial relationships between mines and protected areas
- Analyze a watershed including road density, proximity of roads to streams, and susceptibility of roads to erosion
- Investigate threats to stream health and water quality in a watershed
- Inspect canopy cover, stream gradient, and geology in relation to fish habitat
- Evaluate land ownership patterns and conservation efforts
- Assess the quality of GIS data used to plan a timber sale using images, field data, and photographs
- Analyze timber sale units in relation to steep slopes, streams, sensitive plant species, and old growth stands

Prerequisites and recommendations

Students should have a basic understanding of ArcView 3.x and be familiar with the following:

- Opening an ArcView project
- The Project window
- Basic ArcView documents (views, tables, charts, layouts)
- ArcView themes
- Zooming and panning
- Selecting and identifying features
- Opening a theme table
- Adding a theme
- Using the Legend Editor to change symbols

Students may find it helpful to take the free learning module of *Introduction to ArcView* (Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView 3.x Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

The Conservation GIS Consortium is an association of nongovernment organizations (Ecotrust–Desktop Assistance–Sierra Biodiversity Institute) that provides technology training and management support services to nonprofit conservation organizations using GIS in North America. The consortium was established in 1994 to enhance the ability of its members to provide GIS support services to its constituents, promote collaboration among its members to extend the frontiers of conservation GIS applications, and encourage the formation of new organizations and programs that further the consortium's mission.

Spatial Analysis in Agriculture: A GIS Approach *(for ArcView 3.x)*

by Terry Brase

Overview

This six-module course explores the use of GIS in agricultural applications. It covers precision farming concepts and explores sources of spatial data and the preprocessing of that data for a precision farming project. Students learn specific spatial analysis techniques such as creating a continuous surface from point data, reclassifying datasets for comparison, and supporting techniques such as using Avenue scripts to calculate correlation statistics between crop variables and changing map projections. They also learn how to uncover relationships in spatial data, an important task in precision farming.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to Precision Farming

Where Does Precision Farming Data Come From?

Use of Point Data with Surface Analysis

How Can Different Types of Data Be Compared?

Finding Relationships

Presentation and Interpretation of Results

Audience

This course is for farmers, producers, growers, planters, industry personnel who support crop production, managers, decision makers, and precision farming students. It is also for those who want to apply spatial analysis to agriculture using ArcView 3.x and ArcView Spatial Analyst software.

Goals

- Use the spatial analysis tools available in ArcView 3.x and ArcView Spatial Analyst
- Determine the types and sources of data needed for a precision farming project
- Use GIS tools to preprocess data for a precision farming project
- Define, create, and analyze different types of surfaces using a variety of methods
- Compare different types of agricultural data using normalization and reclassification methods
- Use map queries to find relationships within and between datasets
- Create maps and charts to visualize, interpret, and present analysis results
- Use prescription models

Prerequisites and recommendations

Students should have a good working knowledge of ArcView 3.x and may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook). Knowledge of agriculture data and terminology is helpful.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView Spatial Analyst 1.1 or higher. Students who register for the course can download a copy of ArcView Spatial Analyst 1.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. Terry Brase is an agriculture technology instructor at Kirkwood Community College (KCC), Cedar Rapids, Iowa, and teaches geospatial data collection and agricultural spatial analysis. He is also project director of a National Science Foundation grant in precision agriculture curriculum development. He was named Outstanding Iowa Community College Faculty in 1996, nominated for North Central Regional Outstanding Faculty in 1999, and named the National Mentor for Precision Agriculture by the Phi Theta Kappa in 1999.

Mr. Brase's main job at KCC is to develop a two-year degree program in agricultural geospatial technology. The program will provide students with a strong background in agronomics and geospatial technologies, both of which are needed in the agriculture industry.

Spatial Analysis of Geohazards using ArcGIS new

by ESRI and William Harbert, Ph.D.

Overview

Geologic hazards are ever present and are of increasing concern as communities are forced to expand into the shadow of these dangers. Because geohazards are spatial events, this new four-module course shows how GIS is the perfect tool for analyzing where these geohazards are likely to occur and their potential impact to human life, property, and the environment. In this course, students use ArcGIS to analyze and map geohazards including earthquakes, volcanic activity, landslides, slope failures, tsunamis, and floods. Better understanding of these events is the first step toward effective disaster planning.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Analyzing Earthquakes

Analyzing Volcanoes

Analyzing Floods

Analyzing Slope Failures and Landslides

Audience

This course is appropriate for those who want to apply GIS to better understand geohazards including earth scientists, public sector professionals, and students.

Goals

- Analyze the spatial distribution of faults and earthquakes
- Create a seismic hazard map
- Predict the effects of an earthquake-induced tsunami
- Analyze the spatial distribution of volcanoes
- Create a volcanic hazard map
- Model a volcanic flow
- Determine areas at risk for landslides or slope failure
- Determine the impact of floods
- Model hurricane inundation

Prerequisites and recommendations

Students should have a general, but not necessarily extensive, knowledge of GIS and ArcGIS. Students may find it helpful to take *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses); *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course); or read *Getting to Know ArcGIS Desktop* (ESRI software workbook). Familiarity with basic earth science concepts is beneficial, but not required.

Price: \$80

Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher; ArcGIS Spatial Analyst 8.1 or higher; and ArcGIS 3D Analyst 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the coauthor

Dr. William Harbert is an associate professor of geophysics at the Department of Geology and Planetary Sciences, University of Pittsburgh. His interests include the application of GIS toward earth science problems, and he teaches both introductory and advanced GIS courses. He coauthored an earth science textbook and CD titled *Planet Earth and the New Geosciences*, now in its 3rd edition. Dr. Harbert earned bachelor's degrees in both mathematics–geology and geophysics from Western Washington University, a master's degree in exploration geophysics from Stanford University, and a Ph.D. in geophysics, also from Stanford.

“What I like about Virtual Campus courses in particular is that the exercises review basic concepts of the software while learning new things about the specific course area. Also, the exercises are like real-world problems that you may be involved in at some point later in your career, so your experiences are not just academic exercises.”

Spatial Hydrology using ArcView 3.x

by David Maidment, Ph.D.

Overview

This six-module course provides an introduction to the synthesis of GIS and hydrology—a subject called spatial hydrology. Students study hydrology from a GIS perspective. They develop new ideas and problem solving methods in hydrology using spatial data and GIS functions. They also learn to present GIS data in a format that supports conventional hydrologic analysis methods.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to Spatial Hydrology

Raster and Vector Representation of Hydrologic Features

Watershed and Stream Network Delineation using Digital Elevation Models (DEMs)

Map Projections and Geodesy

Developing a Spatial Database for Environmental Study

Mapping and Analyzing Environmental Data

Audience

This course is for those who want to learn how to solve hydrologic problems using ArcView 3.x and ArcView Spatial Analyst.

Goals

- Understand the basic concepts of spatial hydrology
- Understand the principles of GIS
- Use ArcView to facilitate analysis in hydrology
- Represent hydrologic features in a GIS using the raster–vector data model
- Delineate watersheds and stream networks using DEMs
- Understand the basic concepts of map projections, coordinate systems, and geodesy
- Locate various spatial data sources on the Internet
- Develop a small spatial database for a spatial hydrology or environmental project
- Manage environmental data in Microsoft Access
- Connect ArcView and Microsoft Access
- Map environmental data using surface interpolation

Prerequisites and recommendations

Students should have completed *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView Spatial Analyst 1.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Dr. David Maidment is the Ashley H. Priddy Centennial Professor of Engineering and director of the Center for Research in Water Resources at the University of Texas at Austin, where he has been on the faculty of the Department of Civil Engineering since 1981. An internationally known hydrologist, he is coauthor of *Applied Hydrology* (McGraw-Hill, 1988), coeditor of *Hydrologic and Hydraulic Modeling Support with Geographic Information Systems* (ESRI Press, 2000), and editor in chief of the *Handbook of Hydrology* (McGraw-Hill, 1993). Dr. Maidment is presently associate editor of the *Journal of Hydrology* and the *Journal of Hydrologic Engineering*.

GIS Applications in Disaster Mitigation and Recovery new

by Glenn Johnson

Overview

This new six-module course introduces GIS as a powerful tool to assist in the disaster mitigation and recovery phases of emergency management. Those who take this course will learn to apply GIS to protect life, property, and critical infrastructure from natural disasters—earthquakes, floods, and wildfires—as well as man-made disasters—terrorism or hazardous material spills. Key GIS applications include vulnerability analysis, mitigation, preparedness, and recovery monitoring. In addition, those who take this course will learn how to present GIS data in ways that support emergency management analysis.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to GIS for Disaster Mitigation and Recovery

Mapping Hazards and Analyzing Vulnerability

Assessing Damage

Planning for Man-Made Hazards

Monitoring Mitigation and Recovery Projects

Planning for Shelters

Audience

This course is appropriate for those who need to apply GIS for disaster mitigation and recovery, including public sector professionals, especially those in the fields of emergency preparedness, urban planning, public safety, economic development, and public works; business (corporate) risk management professionals; and college and university students.

Goals

- Recognize the key benefits of GIS to disaster mitigation and recovery
- Identify and create datasets needed for disaster mitigation and recovery
- Create a damage assessment database
- Develop an infrastructure inventory
- Create a risk assessment map for homeland security
- Create a damage assessment map
- Perform multihazard mapping
- Create a mitigation project inventory and map
- Create a recovery project inventory and map
- Find the preferred route to a shelter
- Evaluate potential shelter sites
- Develop a shelter inventory

Prerequisites and recommendations

Students should have a general, but not necessarily extensive, knowledge of GIS and ArcGIS. Students may find it helpful to take *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses); *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course); or read *Getting to Know ArcGIS Desktop* (ESRI software workbook). Familiarity with emergency management is beneficial, but not required.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. Glenn Johnson has more than 40 years of experience in the field of emergency preparedness and city planning, specializing in mitigation and recovery and related computer applications. He is currently a consultant in these fields, having consulted for Palm Beach County, Florida; the People's Republic of China; the government of Indonesia; and the City of Los Angeles. For the City of Los Angeles, he completed a draft recovery and reconstruction plan containing a computer-based hazards vulnerability analysis, City-wide policies, and mitigation and redevelopment actions for each City department to follow before, during, and after a disaster. Mr. Johnson earned a bachelor's degree in business administration from UCLA, a master's degree in city and regional planning from USC, and a certificate in disaster recovery planning from California State University.

Getting Started with Census Data *(for ArcView 3.x)*

by Christopher Williamson, Ph.D., AICP

Overview

This six-module course provides an in-depth examination of the United States Census 2000. Students review the historical and legal context of the census to gain an understanding of how it affects the United States government and political process, distribution of public monies, and American society. While census geography and data are used extensively in GIS and other industries, errors in working with this data are common. The course teaches how to work correctly with census data and discusses key concepts in a nontechnical format. Exercises use data from the 1990 Census and 1998 Census 2000 Dress Rehearsal, which students obtain from the U.S. Census Bureau's American FactFinder® Web site.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introducing the U.S. Census

Overview of Census 2000

Changes Between the 1990 and 2000 Censuses

Census Geography

The TIGER System

Census 2000 Questions and Data

Audience

This course is for those interested in working with census data and products and learning about the procedures developed for the Census 2000. Professionals in the GIS, planning, local government, education, marketing, transportation, and other industries who regularly work with census data may be especially interested in this course.

Goals

- Understand U.S. census data categories and geography
- Create reference maps
- Map census demographic data to identify areas with a specific population profile
- Learn how to access census data and technical documentation
- Use ArcView 3.x to explore census geography and population and housing data
- Navigate the United States Census Bureau's Web sites to obtain census geographic and data files
- Explore redistricting with the ArcView 3.x Districting Extension

Prerequisites and recommendations

Students should have a basic understanding of ArcView 3.x and want to learn how to use it to analyze census data. Students may also find it helpful to take the free learning module of *Introduction to ArcView* (Web-based course).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView 3.1 Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Dr. Christopher Williamson is a senior research associate with Solimar Research Group, a land use and growth management policy consulting firm, and a research associate professor of geography at the University of Southern California, where he teaches in the GIS Graduate Certificate Program. He is a member of the American Institute of Certified Planners (AICP).

Dr. Williamson worked for the United States Bureau of the Census as a computer analyst, geographer, survey statistician, and special assistant to the director. He has extensive experience with census geography, census data collection procedures, quality control, questionnaire design, interviewer training, and data products including raw data, metadata, and summary reports.

GIS Applications for Tax Assessors (for ArcView 3.x)

by Feng Yang

Overview

This six-module course introduces the use of GIS in the local government tax assessment process. Students learn to apply common GIS technical skills to property valuation and the defense of assessed values using ArcView 3.x. The course teaches how to create spatial queries, produce maps, generate statistics, manipulate tabular data, use charts, and employ other technical skills. Most important, students apply these technical skills to actual tax assessing applications. Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to Tax Assessment

Special Regulations Related to Wetlands and Floodplains

Identifying Abutters and Generating Notification Lists

Ratio Studies

Working with Comparable Sales

Developing and Maintaining Parcel Data

Audience

This course is for tax assessors, property appraisers, municipal officials, college students who are pursuing similar fields (i.e., urban planning, community and regional planning, and economics), and anyone interested in local government applications.

Goals

- Understand concepts related to common tax assessing applications
- Apply GIS technical skills commonly used by tax assessors
- Apply GIS skills to real tax assessment applications
- Solve common tax assessment problems using ArcView 3.x
- Identify properties within or partially within wetlands, their protection buffer zones, and floodplains
- Locate abutters, create notification lists, and create mailing labels
- Analyze existing assessments for accuracy by calculating, mapping, and charting important ratios
- Identify, adjust, and map comparable sales
- Link property images and sketches to their corresponding parcels
- Create maps to use in the tax abatement process
- Understand GIS parcel data development issues
- Check quality of parcel data
- Understand how to maintain parcel data

Prerequisites and recommendations

Students should have a working knowledge of ArcView 3.x and may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3. Students who register for the course can download a copy of ArcView Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Ms. Feng Yang has an M.S. in geography from the University of Massachusetts (UMASS) at Amherst and a B.S. in urban and regional planning from Beijing University, People's Republic of China. She is GIS manager for the Town of Brookline, Massachusetts and adjunct faculty at the Geographic Information Technologies Lab at UMASS, Boston. Ms. Yang is currently on the board of the Northeast Arc Users Group. She also teaches GIS training courses for the Massachusetts Association of Assessing Officers.

"This is a great way to take GIS courses. I have recommended Web-based courses to several people here at work. With a limited training budget, this option has allowed me to take three courses that I was really interested in."

Introduction to Urban and Regional Planning using ArcView 3.x

by Christopher Pettit and David Pullar, Ph.D.

Overview

This six-module course provides students with a basic understanding of urban and regional planning concepts and tasks and how they can be managed using GIS. After completing this course, students will be able to use ArcView 3.x software to address real-world social, economic, and environmental planning problems. The skills and techniques presented in the course provide an effective and efficient means of carrying out urban and regional planning tasks.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Introduction to Urban and Regional Planning Concepts

Data for Urban and Regional Planning

Managing and Monitoring Urban Activities

Optimizing Your Site Selection Process

Impact Assessment: An Essential Planning Task

Defining and Mapping the Spatial Components of Strategic Planning

Audience

This course is for professional urban and regional planners in both private consultancies and public organizations (e.g., local government authorities).

Goals

- Appreciate the underlying theory behind urban and regional planning processes
- Recognize the different planning tasks that urban and regional planners undertake
- Identify datasets used to create urban and regional plans
- Undertake effective urban management using cadastral datasets and remotely sensed imagery
- Establish urban land use trends
- Use spatial analysis techniques to determine a suitable location for the siting of a particular land use
- Utilize different impact assessment methods where required
- Understand various planning factors that influence a strategic plan
- Evaluate different planning strategies and arrive at suitable policies and a final conceptual plan

Prerequisites and recommendations

Students should have a working knowledge of ArcView 3.x and may find it helpful to take *Introduction to ArcView* (instructor-led or Web-based course) or read *Getting to Know ArcView GIS* (ESRI software workbook). A basic understanding of three-dimensional GIS data analysis and presentation and knowledge of urban and regional planning theory is beneficial but not required.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 3.1–3.3 and ArcView 3D Analyst (optional). Students who register for the course can download a copy of ArcView 3.x Virtual Campus Edition software for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the authors

Mr. Christopher Pettit has a bachelor's degree, a research master's degree in regional and town planning, and postgraduate qualifications in GIS. He is currently pursuing his doctorate within the School of Geography, Planning, and Architecture, University of Queensland, Australia. His research focuses on the use of spatial decision support technology and the integration of aggregated socioeconomic datasets with disaggregated land use datasets for the suboptimal planning of future urban growth.

Dr. David Pullar is a lecturer and researcher on spatial information science and environmental decision support systems at the University of Queensland. He is active in the modeling and planning research fields with several international publications and industry projects. Dr. Pullar previously worked in GIS research and development at ESRI in California for several years.

Turning Data into Information

by ESRI and Paul Longley, Ph.D., Michael Goodchild, Ph.D., David Maguire, Ph.D., and David Rhind, Ph.D.

Overview

Along with the explosive growth of GIS over the last decade, a considerable increase in the availability and use of digital sources of spatial data has occurred. Many organizations and individuals possess or have access to spatial data that meets their initial requirement for basic mapping and querying. Producing new and useful information from spatial data, however, requires a thorough understanding of the limitations and methods used to process this information.

This six-module course examines the scientific methods used to derive useful information from spatial data. It is a companion to the book *Geographic Information Systems and Science* written by the course authors. Students explore topics related to the visualization, measurement, transformation, optimization, and uncertainty of spatial data. In course exercises, students work with ArcGIS and the ArcGIS Spatial Analyst extension.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of Data and Information

Visualization and User Interaction

Query and Measurement

Transformations and Descriptive Summaries

Optimization and Hypothesis Testing

Uncertainty, Error, and Sensitivity

Audience

This course is designed for those with a basic, intermediate, or advanced knowledge of GIS. Although this course is a companion to the book *Geographic Information Systems and Science*, the book is not required to complete the course.

Goals

- Describe what spatial data is and how information is derived from it
- Assess the nature of spatial data and techniques of spatial autocorrelation, sampling, and interpolation
- Understand how uncertainty in spatial data is propagated through the conception, measurement, and analysis of geographic phenomena
- Comprehend how GIS-based visualization allows users to derive information, interact with spatial data, and represent attributes and spatial objects
- Query and measure spatial and other attribute data
- Perform spatial overlays, interpolation, and density estimations
- Produce statistical summaries of spatial data
- Conduct optimization studies with spatial data to identify desired point locations and routes
- Assess the uncertainties associated with spatial data

Prerequisites and recommendations

Students should have taken one of the following ArcGIS foundation courses: *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses), *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course), or *Migrating from ArcView 3.x to ArcView 8* (instructor-led or Web-based course); or read *Getting to Know ArcGIS Desktop* (ESRI software workbook).

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher and ArcGIS Spatial Analyst 8.1 or higher

Length

Each learning module is approximately two to four hours on online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the coauthors

Dr. Paul Longley is professor of geographic information science at University College London, where he is also deputy director at the Centre for Advanced Spatial Analysis (CASA—www.casa.ucl.ac.uk). He has wide-ranging interests in GIScience including geodemographics, urban modeling, and the integration of remote sensing and GIS. He is currently editor of the journal *Computers, Environment, and Urban Systems*.

Dr. Michael Goodchild is professor of geography at the University of California, Santa Barbara, where he holds other posts including chair of the Executive Committee, National Center for Geographic Information and Analysis (NCGIA) and associate director of the Alexandria Digital Library Project. His current research interests include GIScience, spatial analysis, the future of the library, and uncertainty in geographic data.

Dr. David Maguire is director of products at ESRI with responsibility for product development, GIS solutions, and international business. He was formerly technical and then managing director of ESRI in the United Kingdom and, prior to joining ESRI, was a lecturer in GIS at the University of Leicester, United Kingdom.

Dr. David Rhind is vice chancellor of City University, London, and in January 2001, was honored by the Queen for his contributions to geographical and social sciences. He has been involved in GIS for more than 30 years including working in the Experimental Cartography Unit at Durham University and then Birkbeck College, London, and leading teams developing systems such as the European Commission's Environmental Information System.

Understanding Geographic Data

by David DiBiase

Overview

Every GIS student has heard that data often accounts for the lion's share of the cost of many GIS projects. Due to the cost of geographic data, it makes sense for GIS users and their customers to know what to look for and where to look for their data. This six-module course provides a concise but comprehensive survey of the nature of geographic data and of the technologies and professions involved in producing them—including social surveys, land surveys, the global positioning system (GPS), aerial photography and photogrammetry, topographic and thematic mapping, and satellite remote sensing.

Students learn to find and acquire geographic data on the Internet from institutions such as the U.S. Geological Survey, the U.S. Census Bureau, and the National Spatial Data Infrastructure (NSDI), as well as ArcDataSM Online. They use ArcExplorer software and other public domain data viewing applications to visualize the data they study.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

What Are Geographic Data?

Land Surveys and GPS

Air Photos and Planimetric Data

Elevation Data

Satellite Image Data

Census Data

Audience

This course is for beginning GIS users and customers of GIS service providers who need to become informed consumers of geographic data.

Goals

- Specify the characteristics of geographic data needed to perform common GIS tasks
- Determine whether required data is available
- Recognize the technology required to produce data needed for a particular task

Prerequisites and recommendations

None.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcExplorer 2. Students can download a copy of ArcExplorer 2 for free.

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. David DiBiase is a senior lecturer at Pennsylvania State University, Department of Geography. Mr. DiBiase came to Penn State in 1989 after earning B.S. and M.S. degrees in cartography at the University of Wisconsin, Madison. He was hired to teach introductory and advanced cartography and to direct the department's George F. Deasy GeoGraphics Laboratory.

In 1999, the Association of American Geographers honored Mr. DiBiase with its Media Achievement Award "for exceptional creativity in applying multimedia technology to cartography and geographic education." Penn State's College of Earth and Mineral Sciences presented him with its Mitchell Award for Innovative Teaching in 1999.

Understanding Map Projections and Coordinate Systems new

Overview

This new three-module course introduces students to map projections and coordinate systems. It begins with the basics, such as defining the earth's shape and teaching how to locate geographic features using spherical coordinate systems. Students then learn about horizontal datums, map projection parameters, and the most common map projections. Students also learn how to select a suitable coordinate system and map projection for an application.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Basics of Map Projections

Understanding the Characteristics of Map Projections

Learning About Coordinate Systems

Audience

This course is for those who want to know how GIS analysis is affected by different map projections and which projections are appropriate for different tasks and different parts of the world. The course is also a practical reference for learning how to reproject data and bring together data sets that are stored in different projections.

Goals

- Understand spheroids
- Choose a spheroid for a geographic area
- Understand map projections and coordinate systems
- Spatially reference data in ArcGIS
- Create metadata for spatial data
- Understand datums
- Comprehend the effects of map projection parameters
- Set parameters for different map projections and coordinate systems
- Evaluate map projections for different applications

Prerequisites and recommendations

Students should have a basic understanding of GIS. Knowledge of the ArcMap application in ArcView 8, ArcEditor 8, or ArcInfo 8 is desirable but not required.

Price: \$40

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

Penn State Edition: Cartographic Design new

by Cynthia Brewer

Earn Continuing Education Units (CEUs) for Penn State Edition courses

Penn State Edition courses are customized ESRI Virtual Campus courses that are supported by instructors in Penn State's Department of Geography. Penn State Edition courses adopt a developmental approach in which students are expected to demonstrate increasing competence as the course progresses. Penn State Edition courses involve 24 to 48 hours of student activity (four to eight hours per learning module) and approximately one to two hours of student–instructor communication (10 to 20 minutes per learning module). The primary medium for student–instructor communication will be threaded discussions, accessed directly from links in the course materials. Instructors will answer questions about concepts and exercises and provide feedback on selected student assignments. Upon completion of a Penn State Edition course, students receive a certificate of completion and earn CEUs from Penn State.

Overview

This new six-module course presents fundamental design principles for creating professional-quality maps. As more researchers begin making their own maps using GIS software, they need to be familiar with cartographic design principles that will help them create maps that are clear and convincing to those who will read them. This course covers key design issues, including visual hierarchy, color, and text, and teaches how to choose appropriate supporting map elements, decorative details, and symbology. Students learn practical guidelines for using ArcMap to create layouts that are well-suited to their display medium and that speak effectively to their audience.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

Big Picture Design

Type Basics

Effective Type in Map Design

Color Basics

Color Decisions for Mapping

Customizing Symbols and Elements

Audience

This course is designed for GIS and geography students and GIS professionals who want to learn how to create successful maps that communicate effectively to their intended audience.

Goals

- Design layouts based on map audience, display medium, and purpose
- Arrange map elements to establish visual hierarchy
- Choose export formats suitable for the final display medium
- Understand how the choice of type, type size, type effects, and positioning affect map clarity
- Create labels that indicate feature hierarchy and enhance the overall map design
- Understand basic color concepts
- Devise color schemes that suit map data and accommodate varied map purposes, display media, and users
- Create effective feature symbology
- Design legends and marginalia that support map purpose and the visual hierarchy

Prerequisites and recommendations

Students should have a working knowledge of GIS concepts and familiarity with ArcGIS software. Students should have knowledge equivalent to that found in *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses), *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course), or have read *Getting to Know ArcGIS Desktop* (ESRI software book).

Price: \$300

The first learning module of this course is free. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module consists of approximately four to eight hours of online instruction, though actual hours may vary by student.

Continuing Education Units

Students who complete this course will receive four CEUs from Penn State University.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Ms. Cynthia Brewer is an associate professor in the Department of Geography at Pennsylvania State University, where she teaches introductory cartography and map design. Ms. Brewer completed master's and doctorate degrees at Michigan State University. Before she joined the faculty at Penn State, she taught cartography at San Diego State University and the University of California, Santa Barbara. In 2001, while on sabbatical with the U.S. Census Bureau, Ms. Brewer, in collaboration with Trudy Suchan, produced *Mapping Census 2000: The Geography of U.S. Diversity*, an atlas of Census 2000 data (ESRI Press, 2001).

Ms. Brewer has served on editorial boards of professional journals and as president of the North American Cartographic Information Society. She has also served the Inter-Society Color Council as a member of the board and conference organizer.

Planning for a GIS

by Roger Tomlinson, Ph.D.

Overview

Over the years, many GIS systems have been implemented by organizations at great cost, only to end up being disappointing or underutilized and failing to meet the organization's expectations. How does this happen? Is there a common reason why GIS implementations do not always work? Indeed. Most often, lack of planning is the culprit.

This nine-module course introduces successful planning for a GIS implementation. It focuses on a proven planning methodology rather than on vendor-specific systems. This methodology is applicable for small, departmentwide, or enterprisewide GIS projects. As students explore the steps in the methodology, they learn basic concepts for planning a GIS implementation and how to "think about GIS."

The planning process presented in the course teaches students how to develop a planning proposal and get approval of the proposal from senior management. It also shows how to determine an organization's GIS requirements, focus on those requirements during the planning process, and use the requirements to assess the size and scope of the system needed. Once requirements are identified, students learn how to use them to develop a preliminary design document for both data and technology. They also learn how to perform accurate benefit–cost analysis and prepare an implementation strategy.

In addition to the modules listed below, the course includes a GIS lexicon—a software-independent reference describing important GIS functions. Students will find this lexicon a valuable aid throughout the planning process.

Visit campus.esri.com/coursecatalog for detailed course and learning module descriptions.

Learning module(s)

GIS Planning Basics

Analysis of Business Needs—Taking the First Steps

Describing Information Products

System Scope

Conceptual System Design for Data

Conceptual System Design for Technology

Implementation Strategy

Benefit–Cost Analysis and Risk Analysis

Procurement and Reporting Procedures

Audience

This course is for GIS managers, coordinators, and others who want to learn how to develop, implement, and manage a GIS and its related operations and programs. An introduction to the fundamental principles of GIS is included.

Goals

- Identify the steps for developing a project proposal
- Understand the importance of involving senior management
- Analyze an organization's GIS requirements
- Align system use to meet business needs
- Understand the importance of information products in the planning process
- Determine the size and scope of a system
- Develop a preliminary design document that addresses data and technology
- Perform a benefit–cost analysis
- Develop a cost-effective GIS implementation strategy

Prerequisites and recommendations

Students should have an understanding of basic GIS concepts.

Price: \$160

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

Length

This course has nine learning modules and includes approximately 36 hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Dr. Roger Tomlinson is president of Tomlinson Associates Limited, a company of consulting geographers with branches in the United States, Canada, and Australia. Clients include National Parks; the U.S. Forest Service; the City of Ottawa; the government of the State of Victoria, Australia; The World Bank; and the Food and Agriculture Organization of the United Nations.

Widely called the "father" of GIS, Dr. Tomlinson originated and directed the development of the first GIS, the Canada Geographic Information System, in the early 1960s. He coined the term "geographic information system," thus naming the field. Throughout his 35 years of working in GIS, he has developed the best practical GIS planning tools, and this course is based on those.

Dr. Tomlinson is past president of the Canadian Association of Geographers. His work has been honored by the Royal Geographical Society's prestigious Murchison Award, the Association of American Geographers Anderson Medal of Honor for Applied Geography, and the GIS World Lifetime Achievement Award, among others. He was the first recipient of the ESRI Legend in Leadership Award and is the most recognized GIS planning specialist in the world.

Protecting Your Investment in Data with Metadata

by George Shirey

Overview

The geographic information industry is growing by leaps and bounds, and the need for geospatial data has never been greater. Billions of dollars each year are being spent to create geospatial databases, yet many of the organizations spending vast resources to create geospatial data are failing to protect their investment. Metadata, or data about data, is a critical component of a geographic database. Metadata for geospatial data is designed to capture critical bits of information about the data and the processes used to create and maintain the data.

This six-module course is designed to make GIS professionals take a critical look at their data documentation needs. It teaches them how to use ArcCatalog to document data according to the Federal Geographic Data Committee's (FGDC) Content Standard for Digital Geospatial Metadata.

Learning module(s)

Metadata: What Is the Big Deal?

Standards for Documenting Geospatial Data

Managing Metadata with ArcCatalog

Documenting Your Data

Data Properties Automatically Captured by ArcCatalog

How to Make Metadata Work for Your Organization

Audience

This course is designed for GIS professionals who are interested in learning how to use and maintain metadata for geospatial data.

Goals

- Understand the importance and function of metadata
- Illustrate the need for a geospatial metadata standard and the role metadata plays in the National Spatial Data Infrastructure (NSDI)
- Comprehend FGDC content standards
- Recognize different profiles and extensions to the FGDC standard
- Navigate FGDC reference materials
- Understand the relationship between FGDC data elements and the properties of geospatial data
- Know how to use ArcCatalog to view and manage metadata
- Learn how to use the ArcCatalog FGDC metadata editor
- Identify which information is critical for digital geospatial data documentation
- Utilize good metadata practices for increased return on your metadata investment
- Develop and implement a plan for data documentation into everyday work patterns

Prerequisites and recommendations

Students should have a good understanding of GIS concepts. Knowledge of ArcGIS software (ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1) is useful but not required.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher

Length

Each learning module is approximately two to four hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. George Shirey received his B.S. in geographic education from Appalachian State University and currently works as the information resource manager of Presentation Systems South, Inc. A main focus of his work is developing a geographically based marketing strategy and implementation plan. He also provides metadata consultation and training. Prior to his current position, Mr. Shirey was a data specialist for Technology Planning and Management Corporation (TPMC), on contract to the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center in Charleston, South Carolina. Much of his time there was spent training coastal resource managers, where he instilled the importance of data documentation and provided the resources to do so properly. He was also involved in developing tools to better maintain spatial data documentation. An underlying theme of his work is expanding the role of metadata in geographic analysis. Before working in the GIS field, he developed curricula for geographic educators.

"This was my first online course. I found it easy to follow and feel I did learn something from it. Thank you for making these courses available."

Introduction to Geostatistical Analysis new

by Jay Ver Hoef, Ph.D.

Overview

The first learning module of this new six-module course teaches students how to produce maps and new data using ArcGIS Geostatistical Analyst. The remaining five modules are dedicated to teaching the principles and application of geostatistics. Along with conceptual material that is presented, students perform exercises based on real-world scenarios to learn how to measure the distribution, variance, and shape of sample data and how to produce new data using several different methods of interpolation. Students learn what the settings used for kriging do, why one type of interpolation is used instead of another, and what a semivariogram is.

Learning module(s)

Basics of Geostatistical Analysis

Exploratory Spatial Data Analysis

Deterministic Interpolation Methods

Kriging Methods

Semivariograms and Covariances

Interpolation Tools

Audience

This course is designed for GIS professionals and students who want an introduction to geostatistics.

Goals

- Create different types of maps using geostatistics
- Gain an understanding of data interpolation methods such as kriging, IDW, global and local polynomial, and radial basis functions
- Learn how to choose the appropriate interpolation method for an application
- Learn the different linear kriging methods including ordinary, simple, and universal kriging
- Understand how spatial autocorrelation can be quantified with statistical techniques such as semivariograms and covariances
- Learn how the accuracy of interpolated surfaces can be measured using cross-validation techniques

Prerequisites and recommendations

Students should have a good understanding of GIS and have taken an introductory college course in statistics or have the equivalent knowledge. While not required, it is recommended that students take one of the following ArcGIS foundation courses: *Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* or *Penn State Edition: Learning ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (Web-based courses); *Introduction to ArcGIS I (for ArcView 8, ArcEditor 8, and ArcInfo 8)* (instructor-led course); or have read *Getting to Know ArcGIS Desktop* (ESRI software workbook). It is also recommended that students take *Learning ArcGIS Spatial Analyst* or be familiar with basic surface analysis and data interpolation.

Price: \$100

The first learning module of this course is free. Faculty, staff, and students of educational institutions worldwide may qualify for a 40 percent discount when purchasing this course. Prices are subject to change without notice.

Software

Web browser—Internet Explorer 4.0 or higher or Netscape 4.0 or higher

ESRI software—ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1 or higher and ArcGIS Geostatistical Analyst 8.1 or higher

Length

Each learning module is approximately two hours of online instruction, though actual hours may vary by student.

Related courses

See the Learning Guide at the beginning of this catalog.

About the author

Mr. Jay Ver Hoef, Ph.D., currently works as a biometrician for the Wildlife Conservation Division of the Alaska Department of Fish and Game and consults on a wide variety of statistical methods for wildlife research and management. He is also an adjunct professor of statistics with the Mathematics Department at the University of Alaska, Fairbanks. His specific research interests include spatial statistics, Bayesian statistics, sampling, experimental design, and multivariate statistics, especially for ecological, wildlife, and environmental studies.

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